

RESEARCH AND PRACTICE OF HEALTH PROMOTION

REPORT ON PREVENTION OF SUBSTANCE ABUSE

VOLUME 29

Federal Centre for Health Education **BZgA**

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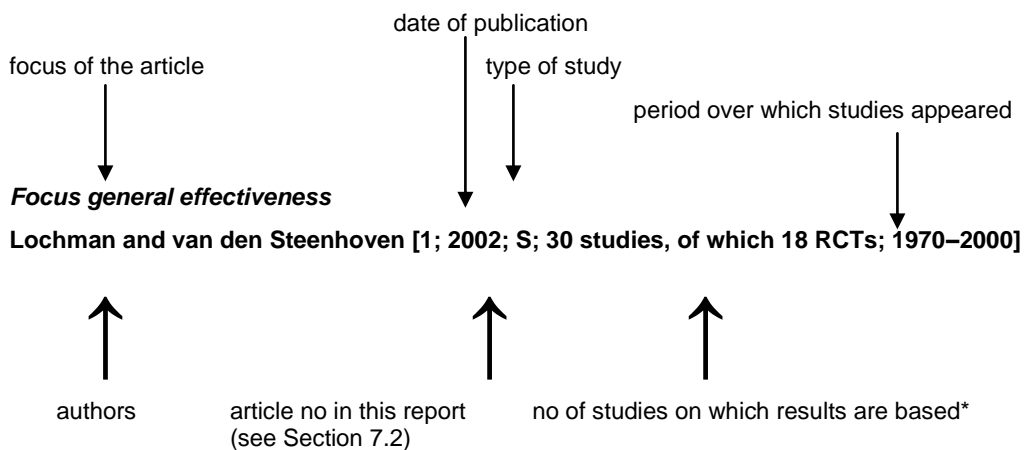
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Types of study included

M	meta-analysis
S	systematic review
U	unsystematic review
E	expert survey
BP	best-practice survey
IS	individual study

Presentation of results

Brief identifying details in bold type (see example below) introduce each article:



* Where possible, the number of studies originally identified but not selected is also shown and their design is indicated - ie RCT (randomised controlled trial); CT (controlled trial); ITS (interrupted time series)

Conclusiveness of results

- | | |
|---|---|
| A | meta-analysis drawing on high-quality individual studies (RCTs, CTs and ITSs) |
| B | review drawing on high-quality individual studies (RCTs, CTs and ITSs) |
| C | analysis or systematic review covering all relevant studies |
| D | unsystematic review, expert survey or best-practice survey |
| E | discussion of individual study or results on the basis of empirical evidence that does not provide direct information on the results or test them |
| F | contradictory body of evidence from reviews in categories A to C, with a conclusion tending towards the most persuasive review |

**RESEARCH AND PRACTICE OF HEALTH PROMOTION
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**REPORT ON PREVENTION
OF SUBSTANCE ABUSE**

Anneke Bühler, Christoph Kröger

Federal Centre for Health Education **BZgA**
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Foreword

In 1993 the Federal Centre for Health Education (BZgA) commissioned the work subsequently published under the title *Expert Report on Primary Prevention of Substance Abuse*. Ten years on, it has become necessary to offer specialist readers in Germany an overview of current research into addiction prevention. This report, drawing on high-quality surveys including reviews and meta-analyses of measures that have proved successful in preventing substance abuse, provides specialist readers with information on effective anti-addiction strategies. The work was carried out on behalf of the BZgA by the IFT (Institute for Therapy Research) in Munich.

In recent years, research into the prevention of substance-related disorders has generated a considerable body of knowledge that is certainly relevant but needs to be translated into practice much more widely than has been the case to date. The primary focus should be on long-term, integrated concepts for behavioural and circumstantial prevention, taking account of the environment in which children and young people live. The effective prevention of addiction depends on a targeted approach informed by the results of relevant research.

I am now pleased to be able to present a publication that provides information about best practice in addiction prevention for everyone working in the field as well as those involved in planning and decision-making at national, federal state and municipal level, and offers expertise to assist in the design of addiction-prevention measures.

Cologne, February 2006

Dr Elisabeth Pott
Director, Federal Centre
for Health Education

Key details of the project

Project title:	Report on prevention of substance abuse
Aims:	<ul style="list-style-type: none">– to provide an up-to-date record of research results on addiction prevention– to follow up the 1993 <i>Expert Report on Primary Prevention of Substance Abuse</i>
Implementation period:	September 2003 to November 2005
Methods:	assessment of the effectiveness of measures for preventing substance abuse, based on high-quality surveys including reviews and meta-analyses
Project carried out by:	IFT – Institute for Therapy Research Parzivalstraße 25 80804 Munich
Authors:	Dr Anneke Bühler and Dr Christoph Kröger
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Summary

The aim of this report, prepared with financial support and advice from the BZgA, is to assess the effectiveness of measures for the prevention of substance abuse,¹ drawing on high-quality surveys including reviews and meta-analyses. Effectiveness, in this context, means impact in preventing, delaying or reducing children's and young people's consumption of tobacco and alcohol as well as cannabis and other illegal psychoactive substances. The study covers preventive measures that are both behavioural and circumstantial. It presents conclusions about the effectiveness of measures in a range of settings as well as substance-specific conclusions. The conclusions reported are rated according to the strength of the evidence on which they are based. Observations on gender-specific effectiveness, on negative consequences of addiction-prevention measures and on efficiency are also included. In addition, the theoretical background to effective measures is described and assessed.

Forty-nine publications over the period 1993-2003 were systematically identified and selected (eight → meta-analyses, 22 systematic → reviews, 13 unsystematic → reviews, four → best-practice surveys and two other publications). Two assessors independently rated the articles by content and method using a coding system. They then jointly formulated their conclusions. All the findings are accompanied by a conclusiveness rating and a reference to the articles on which they are based. The conclusiveness of supporting material is rated as follows: A (a → meta-analysis involving high-quality studies); B (a systematic → review involving high-quality studies); C (a meta-analysis or systematic review covering all relevant studies); D (an unsystematic review); E (a discussion of an individual study or conclusion on the basis of empirical results); and F (a contradictory body of evidence from reviews in different categories).

On the basis of the rating process, it is possible to recommend the following approaches:

- in a **family** context, offering comprehensive measures that combine training for parents, children and family units (chiefly relevant to alcohol, conclusiveness rating C);
- at **school**, running interactive programmes that build on social-influence or life-skills models (relevant to all substances, conclusiveness rating A);
- at **school**, **avoiding** one-off information sessions, isolated emotional-education initiatives and other non-interactive measures (relevant to all substances, conclusiveness rating A);
- using **media** campaigns to accompany other measures, not in isolation (relevant to tobacco, conclusiveness rating C);

¹ For simplicity's sake the terms 'prevention of substance abuse' and 'addiction prevention' are used interchangeably throughout this report.

- using **legislative measures** to influence the price of substances (relevant to tobacco and alcohol, conclusiveness ratings C and D) and the legal age for their consumption (relevant to alcohol, conclusiveness rating B).

It was not possible to present conclusions on prevention measures in the field of leisure, and the evidence on community-based addiction-prevention efforts is still inconclusive.

Other results of the report are that:

- individual addiction-prevention measures can have unintended effects, resulting in increased substance consumption;
- too few individual studies and reviews have been conducted to permit a cost-benefit analysis;
- where a gender difference is apparent, it is likely that girls have benefited more from addiction-prevention efforts to date;
- a considerable body of theory is available, on the basis of which measures could be developed in various fields, but there is little monitoring of its implementation.

The report also discusses the difficulty faced by researchers in determining which measures to prioritise. The preference is for prevention that combines the behavioural and circumstantial approaches. Reliance on ‘consumer behaviour’ as the sole criterion for assessing the effectiveness of addiction-prevention measures is criticised. The report concludes with a review of current addiction-prevention research in German-speaking countries and an indication of the next steps that need to be taken by researchers and practitioners.

1. INTRODUCTION

1.1 The problems: use and abuse of substances by children and young people

The prevalence of clinically relevant substance consumption by adults is measured using → DSM-IV² or → ICD-10 diagnostic criteria. Corresponding representative figures for German teenagers and young adults emerged from research involving more than 3 000 14 to 24-year-olds in Munich (Wittchen *et al.* 1998). In that study 19% of respondents had a nicotine dependency (Nelson and Wittchen 1998), 15.1% of males and 4.5% of females abused alcohol, and 10% of males and 2.5% of females had an alcohol dependency (Holly and Wittchen 1998). With regard to consumption of illegal substances such as cannabis, amphetamines, cocaine, opiates and hallucinogenic drugs, abuse was diagnosed among 4.1% of males and 1.8% of females, while 2.5% of males and 1.6% of females were found to be dependent (Perkonigg *et al.* 1998).

Because clinical diagnosis of substance abuse or dependency among young people is not undisputed and is not in itself sufficient (see, for example, Newcomb and Bentler 1989 and Hays and Ellickson 1996), this report cites not only figures for the prevalence of consumption but also other **indicators of problem consumption**, namely binge drinking and drunkenness, daily and heavy use of tobacco, consumption of illegal substances, consumption of more than one type of substance and the experience of substance-related problems.

Alcohol is the psychoactive substance most widely consumed by children and young people. This is clear from all epidemiological studies, including an up-to-date representative survey of drug use by young people involving a sample group of more than 3 000 12 to 25-year-olds in Germany (BZgA 2004b). Early **consumption of alcohol** by younger people tends to take the form of occasional drinking of small quantities. The older the respondents, the higher the proportion of regular consumers and consumers of larger quantities. Depending on the types of drink involved, the proportion of 12 to 15-year-olds reporting regular (i.e. at least once weekly) consumption of alcohol ranges up to 7%. Among 16 to 19-year-olds, up to 27% drink alcohol regularly, while the corresponding proportion in the 20-25 age group is up to 29%. Across the different age groups there is a trend to increasing prevalence of beer and wine consumption. Regular drinking of mixed alcoholic drinks and spirits, by contrast, is most prevalent among respondents in their middle to late teens (the 16-19 group). This is also the age group in which average weekly alcohol intake is highest – 97.5 g of pure alcohol, compared with 20.9 g in the 12-15 age group and 82.2 g among 20 to 25-year-olds.

Episodic heavy drinking (drunkenness and binge drinking) is an indicator for a pattern of alcohol consumption where consumers are at risk. The German drug-use study

² Terms explained in the glossary are marked with an arrow (→).

(BZgA 2004b) put the average age at which young people first get drunk at 15.1 years. Overall, 61% of the 12 to 25-year-olds surveyed had been drunk at least once in their lives and 23% had been drunk within the previous three months. A third (34%) of teenagers and young adults reported that on at least one occasion within the previous 30 days they had consumed five or more glasses of alcohol consecutively. While binge drinking remains relatively uncommon in the 12-15 age group (affecting 12% of respondents), it is practised by almost half (46%) of 16 to 19-year-olds. In the European School Survey Project on Alcohol and other Drugs (ESPAD), which involved 11 000 14 to 15-year-olds in Germany (Kraus *et al.* 2004), 29.8% reported that on one or two occasions within the previous 30 days they had consumed five or more units of alcohol consecutively; 17.2% had done so on three to five occasions; and 11.8% had done so at least six times. This type of risk-inherent drinking was more prevalent among males than females (BZgA 2004b; Kraus *et al.* 2004).

More than half the children and young people in Germany try at least one cigarette in the course of their lives. In general, however, tobacco use is less prevalent than alcohol consumption. Depending on the studies and age groups involved, between 66% and 78% of respondents report having used tobacco in the course of their lives, whereas the corresponding figures for alcohol consumption are 90-97% (BZgA 2004a, b; Kraus *et al.* 2004; Lieb *et al.* 2000). The German drug-use study (BZgA 2004a) puts the current proportion of daily smokers in the 12-25 age group at 22% (23% among males and 20% among females). The proportion increases with age, from 5% among 12 to 15-year-olds to 30% among 20 to 25-year-olds. Four per cent of respondents (12% of smokers) were heavier users, smoking at least 20 cigarettes a day.

Children and young people also come into contact with **illegal substances**. Half (49%) of the 12 to 25-year-olds in the German drug-use study (BZgA 2004c) report having been offered an illegal substance and 32% had tried such a substance at least once. In the 12-15 age group 8% report some experience with drugs; the corresponding figure for the 16-19 age group is 36%; and for the 20-25 age group it is 44%. By far the most commonly tried illegal substance is cannabis: 24% of 12 to 25-year-olds had used only hashish or marijuana. By contrast, just 8% had consumed other psychoactive drugs such as amphetamines (4%), ecstasy (4%), psychoactive plants including mushrooms (4%), cocaine (2%) or LSD (2%).

Most consumers of psychoactive substances use more than one type of substance (**multiple consumption**). Among the 12 to 25-year-olds who had smoked tobacco, 44% also had experience with the use of cannabis (BZgA 2004c). Among teenagers and young adults who had been drunk frequently (on at least six occasions), 67% also used cannabis and 20% consumed other illegal substances. Among those respondents who had consumed cannabis, 22% also had experience with other illegal drugs.

For the majority of people, consumption and abuse of psychoactive substances begins at a young age (i.e. they are teenagers when they first try or begin using drugs). On average, people smoke their first cigarette at the age of 13.6 years, get drunk for the first time at 15.5 years old and first smoke cannabis at 16.4 years old (BZgA 2004a, b,

c). Initial experiences with other illegal drugs – albeit generally very uncommon – take place between the ages of 16 and 18 (BZgA 2004c).

Substance use is associated with health, legal and financial risks for the individuals concerned. In the ESPAD study (Kraus *et al.* 2004) 15 to 16-year-old school students were asked about alcohol-related and drug-related problems. It transpired that 11% of respondents had damaged their own property as a result of alcohol consumption, 9% had been implicated in trouble or arguments and 8% had been involved in accidents, 7% had had a sexual experience which they later regretted and the same proportion reported having lost money. Comparatively few young people had experienced drug-related problems. Among those who had, the most commonly experienced difficulties were trouble and arguments (3.4%), problems with friends (3.3%) or parents (3.2%) and under-achievement at school (3.2 %).

Taken overall, the epidemiological information on substance consumption and abuse indicates that consumption of substances, particularly legal substances, in teenhood is very widespread. There is also a substantial minority of young people who regularly consume cannabis. Substance abuse in youth entails far-reaching health, legal and financial risks and has negative consequences for the psychosocial development of individuals and the wellbeing of others (for more detail see Reese and Silbereisen 2001).

1.2 Aim of the report and target readership

The report aims to assess the effectiveness of measures for the prevention of substance abuse, drawing on → high-quality surveys (→ reviews and → meta-analyses). **Effectiveness**, in this context, means impact in preventing, delaying or reducing consumption of tobacco and alcohol, as well as cannabis and other illegal psychoactive substances, among **universal and selective sample groups**³ of children and young people. Both **behavioural and circumstantial preventive measures** are assessed. The report's principle contribution is to present conclusions – based on systematically identified and selected literature about the effectiveness of various measures (involving a range of approaches) – which have been given a conclusiveness rating. Observations on gender-specific effectiveness, on negative consequences of addiction-prevention measures and on efficiency are also included. In addition, the theoretical background to effective measures is described and assessed.

The report is aimed at people with responsibility for addiction prevention (i.e. decision-makers) at all levels of active policy formulation, as well as those in charge of developing, implementing and/or evaluating addiction-prevention measures.

3

The classification of preventive measures as primary, secondary or tertiary has been replaced by the division into universal, selective and indicative forms of prevention (NIDA 1997). Universal measures are those which target the population generally, i.e. they are directed at ordinary, non-specialist groups of people, such as school students. Selective programmes, on the other hand, target groups of people deemed to be at particular risk from substance abuse but not yet showing evidence of it (the children of addicts' families, for example). The same applies to indicative measures, although these are directed not at groups, but rather at individuals already affected by other types of problem behaviour.

2. THE THEORIES BEHIND ADDICTION-PREVENTION MEASURES

Addiction prevention can (and should) be supported by theory at three levels: with regard to the content of measures undertaken, to the methodology and didactics of their implementation and to the way they are introduced and embedded in practice (Pentz 2003). In the following we concentrate on theories about developing the content of addiction-prevention measures. The main thrust of the theories is outlined and, where possible, we include a summary of current research or a description of implications for practice that have not yet been taken into account.

In setting out to describe theories which underpin the content of effective addiction-prevention measures it is useful to focus on the empirically orientated model of → risk factors and protection factors, because the fundamental notion it conveys – that risk factors weaken and protection factors strengthen – exercises an explicit or implicit influence on conceptualisation of the **intervention model** for all types of measure. The first question about any initiative is what it needs to deliver in order to prevent children developing problems (Kim *et al.* 1998). Likewise, virtually all measures entail application of the theories of planned behaviour and social learning, which focus on the social-cognitive processes of consumption. We go on to describe differentiated theories applied in behavioural prevention programmes with children and young people, which we mention in relation to the report's results in the relevant fields (family, school, community, media and legal framework).

2.1 Theories relevant to all measures

The model of risk and protection factors and the resilience perspective

→ Risk and protection factors are factors that influence substance consumption. Risk factors are associated with an increased likelihood of consumption. Where risk factors are present, the simultaneous presence of protection factors reduces that likelihood. For example, the impact of parental separation as a risk factor for subsequent substance consumption could be mitigated by the protection factor of inter-sibling bonding.

The resilience perspective is closely associated with the → risk-and-protection-factors model but it focuses on persons at high risk. The term 'resilience' describes the processes whereby an individual, a family or a community confronted by severe damage or high risk can nonetheless adapt or function successfully (Luthar *et al.* 2000). Resilience should not, therefore, be understood as a personality trait but rather as a number of processes that can be conclusive when the system in question holds together effectively despite severe difficulty or sustained risk. At individual level an ongoing risk can be a factor such as a parent's mental illness or the fact of growing up in poverty, with which a child deals by force of his or her character (intelligence or simply temperament) or, in many cases, by forging social ties (with supportive teachers or persons to whom the child relates well). The term 'resilience' is applicable at family level when, for example, the passing on of an alcohol problem from the parental family

to the one's own family is prevented by a change in family rituals. At community level, we can characterise as 'resilient' those processes whereby, for example, a place returns to normality after a natural disaster or a terrorist attack.

An intervention model built on the → risk-and-protection-factors model assumes that the addiction-prevention measure in question will weaken risk factors and promote protection factors, with the ultimate aim of preventing substance abuse.

Research has identified many → risk factors and protection factors in the evolution of substance consumption, which can be used to characterise resilience processes. Petraitis and Kollegen (Petraitis *et al.* 1995 and 1998) propose a classification grid for factors influencing substance consumption (see Table 1). They identify three spheres of influence. The social and inter-personal sphere includes characteristics and modes of behaviour in young people's immediate social environment. The cultural or attitudinal sphere comprises the young person's attitude and the factors that influence it. Thirdly, the intrapersonal sphere is concerned with young people's fundamental character traits and emotional circumstances and their behavioural repertoire. Each sphere is divided into levels of influence ranging from 'immediate' to 'distant/ultimate'. The levels represent a ranking of the various factors in terms of how immediate their influence is. Variables are thus arranged to indicate that some (e.g. abstinence) influence substance consumption directly, whereas others (e.g. external perception of control, Petraitis *et al.* 1998) exert an influence via mediating factors. The more distant the factor is, the more mediating levels are required to explain its influence on consumption. Table 1 on page 20 shows the definitions and examples of spheres of influence. The authors do not suggest that the information presented is exhaustive.

This simple intervention model requires further development in several respects. An additional conceptual distinction is possible between vulnerability factors and compensation factors. Vulnerability factors indicate a certain increased sensitivity to risk factors and further heighten probability (Rutter 1987). The experience of parental separation can thus be aggravated by the vulnerability factor of denial as a 'problem-solving strategy'. Luthar (1993) has suggested that the positive converse of a risk factor should be termed a 'compensation factor' inasmuch as it reduces probability irrespective of the presence of risk factors. Protection factors, by contrast, mitigate risk factors. This additional differentiation of influencing factors – which has the potential to determine their effect more precisely – is seldom reflected in practice.

TYPES			
LEVELS	Social/interpersonal	Cultural/attitudinal	Intrapersonal
Ultimate (distant)	<p>Characteristics of persons who constitute the most intimate system of social support. Unspecific for substance use and outside the control of the young people. They expose young people to the risk of inability to withstand social pressure.</p> <ul style="list-style-type: none"> – Appreciation from family members rare – Lack of parental warmth, support and supervision; parental appraisal negative – Parental separation, family under pressure – Unconventional views on the part of parents or peers 	<p>Characteristics of young people's immediate environment – i.e. their home surroundings, school and culture – which are outside their control. They expose young people to the risk of developing positive attitudes to substance use.</p> <ul style="list-style-type: none"> – Crime and unemployment rates – Poor schools and poor conditions for adequate education; little opportunity for reward within school; teachers' appraisal negative – Image of substances in the media – Substances easily obtainable; weak legislation against substance consumption 	<p>Personal characteristics and biological predispositions which are outside the control of the young people and capable of stimulating their motivation to use substances or of increasing their physiological susceptibility to them</p> <ul style="list-style-type: none"> – Impaired cognitive functions – Genetic susceptibility to substance dependency and aggressiveness – Impaired impulse control – External control conviction – Extraversion, readiness to take risks, sensation seeking, neuroticism or emotional instability, intelligence
Remote (indirect)	<p>Emotional attachment to influential role models coupled with substance-specific behaviour on their part and an impression of them that encourages substance consumption</p> <ul style="list-style-type: none"> – Lack of attachment to family members and lack of desire to please them – Powerful attachment to peers and strong desire to please them – Influence of peers stronger than that of parents – Substance-specific impression of role models and behaviour on their part 	<p>Young people's general views and patterns of behaviour contributing to a positive impression of substance use</p> <ul style="list-style-type: none"> – Lack of attachment to traditional values and norms, school and religion; social exclusion, critical attitudes, rebellion and tolerance of deviance – Lack of competitiveness – Powerful desire for independence from parents – Hedonistic attitude, low tolerance of deferred rewards 	<p>Current emotional state and general abilities that promote personal motivation towards substance use and reduce capacity for resistance</p> <ul style="list-style-type: none"> – Low self esteem – Anxiety, depression or stress – Lack of coping strategies – Inadequate social skills – Lack of ability to achieve at school
Proximal (close)	<p>Assumptions about the normative nature of substance use and about pressure to use substances</p> <ul style="list-style-type: none"> – Judgments about prevalence – Desire to resemble other consumers – Assumption that important people approve of substance use 	<p>Assumptions about costs and benefits of substance use</p> <ul style="list-style-type: none"> – Expected costs and assumed benefits of substance use – Own and others' views about substance use 	<p>Assumptions about own ability to use or avoid substances</p> <ul style="list-style-type: none"> – Ability to say no; perception of one's own resilience – Own impression of ability to actually use substances
Immediate	Intention, behaviour associated with experimentation		

Table 1: Factors influencing substance consumption (based on Petraitis *et al.* 1998)

In terms of content, distinctions need to be drawn between different outcome variables. The constructs listed in the table thus differ according to whether the focus is on experimental consumption of legal or of illegal substances. Parents as a consumption model, for example, play a major role with regard to legal consumption. By contrast, many studies fail to confirm the parental model as a factor influencing initial consumption of illegal substances (Petraitis *et al.* 1995; Petraitis *et al.* 1998).

A further important distinction among influencing factors concerns their specificity for particular forms of problem behaviour (Reese and Silbereisen 2001). If a factor is a prior indicator for just one form of problem behaviour (such as substance abuse), it is specifically cited as such. On the other hand, if it is associated with more than one type of problem behaviour (delinquency and substance abuse, for example) it is cited as an unspecific or general factor. Availability of illegal drugs is, for example, a specific risk factor for substance abuse, whereas a difficult temperament in childhood is a general, unspecific risk factor for delinquency and for substance abuse in youth. Even a differentiated compilation of influencing factors is not, however, a substitute for theories that place such factors in relation to one another, portray the processes through which they take effect and make clear their relative strengths.

Theory of planned behaviour and social-cognitive learning theory

The immediate circumstances in which substance consumption occurs are modelled by **the theory of considered action or planned behaviour** (Ajzen 1985) and by **social-cognitive learning theory** (Bandura 1986). According to these theories, consumption is determined by the intention to consume, which depends on a) expectations of the physical and social effects and b) their value, as well as c) subjective expectations of norms and d) personal effectiveness in relation to consumption behaviour. A young person is more likely to get drunk at a party, for example, if by doing so he or she expects to win the admiration of friends or to induce a pleasant and desired feeling. Young people will also be more inclined to behave in this way if they believe that getting drunk at parties is a normal form of behaviour and they know how to induce a state of drunkenness.

These cognitive steps are learned through modelling (on the example of friends, family and the media) and social reinforcement and are influenced by personal experiences of consumption. If friends or parents smoke, an attentive young person can learn how, where and when to consume cigarettes. If smoking entails advantages – or at least no disadvantages – for the models, there is then an increased likelihood that the young person will reach for a cigarette. If he or she begins to smoke and experiences it as pleasantly stimulating or relaxing, then his or her positive expectations about tobacco consumption will be reinforced.

An intervention model that reflects the theory of planned behaviour and social-cognitive learning theory will ensure that decisive addiction-prevention content is

transferred into any measure implemented: accurate information needs to be supplied about the effects of substances; effects need to be assessed critically; distorted expectations about norms need to be corrected; and personal effectiveness in remaining a non-consumer or a responsible consumer needs to be promoted. Through such measures, young people learn by means of models how people behave if they do not wish to consume psychoactive substances, or how they can achieve desired goals by means other than substance consumption.

Cleaveland (1994) offers an overview of how social-cognitive theory can be applied not only to the content but also to the methodology and didactics of addiction-prevention measures. Nonetheless, the potential of this theory – which is practically concerned with the application of models – has not been fully exploited in the programme design. There is thus scope for practical recommendations about the transmission of addiction-prevention content in relation to the four determinants of model learning: attention, retention, motivation, and production (see Cleaveland 1994, p. 58).

2.2 Theories for behavioural measures

Behavioural measures are implemented chiefly in school contexts. This has less to do with their design and content, however, than with the fact that schools are an excellent setting in which to reach children and young people and to carry out programmes with them. In most cases, school as a system has scarcely any role to play in such measures.

Social influence While the social influence model (Evans *et al.* 1978) has certainly been the most influential model to date in behavioural addiction prevention, it in turn builds on social learning theory (Bandura 1986) and the theory of social inoculation (McGuire 1964). It predicts substance consumption according to the influence of a range of social agencies: peers, family and media. Measures based on this model generally have two components. Resilience training entails delivering information about group pressures and advertising strategies, so that participants will be ‘immunised’ against seductive forces, and saying ‘no’ in risk situations is also practised. Secondly, a standard-setting educational component involves transmitting knowledge about the negative consequences of consumption and correcting what is generally an exaggerated impression of levels of consumption among peers.

In addiction prevention, group pressure is commonly seen as the decisive variable in the strong relationship between peers’ consumption and own consumption. Basic research explains that relationship, however, not only through the influence of peers on the young person but also through the fact that young people select their peer groups. Peer groups can influence the individual’s consumption by making substances available and demonstrating how they are consumed, by sharing opinions, views and values in relation to consumption, or through the fact that consumption plays an important role in membership of, and identification with, the group (Oetting and Beauvais 1986). In a critical → review of research into peer influence on substance

use, Bauman and Ennett (1996) suggest that the socialising exercise of influence by peers on consumption is probably over-estimated. Long-term studies which allow the selection theory to be tested confirm that, in fact, substance use is what brings young people together, rather than the group luring otherwise ordinary young people into substance consumption (Bauman and Ennett 1996).

Contrary to the prevailing view that only peers and friends play a decisive role in the development of substance consumption, the importance of parents in this regard, particularly in relation to consumption of legal substances, should not be underestimated (Hansen *et al.* 1987; Kandel 1998; Engels *et al.* 1999). The connection between parental consumption and children's consumption has been explained with reference to various mechanisms (Engels *et al.* 1999): the influence that parents exert as models for their children, substance-specific family standards that have been internalised, and the increased availability of substances if parents consume at home.

Life-skills model and the theory of problem behaviour

The life-skills approach (Botvin 1996) is heavily influenced by the → risk-and-protection-factors model and the theory of problem behaviour (Jessor and Jessor 1983). It is a tenet of the latter that there is a connection between different types of problem behaviour and that certain risk-imbued behaviour patterns are caused by identical factors. That being so, prevention measures under the heading of 'life skills' should also be directed at these general social and psychological factors. According to a WHO definition (1994), people may be said to have life skills if they know and like themselves, think critically and creatively, are capable of communicating and of forming and sustaining relationships, take considered decisions, solve problems successfully and are able to cope with emotions and stress.

There is much critical debate about whether smoking, as a form of problem behaviour, should be ranked in the same category as, for example, consumption of illegal substances. In relation to the theory of problem behaviour, Turbin, Jessor and Costa (2000) researched the extent to which smoking tends to be associated with other forms of problem behaviour among young people (precocious sexual activity, alcohol abuse, illegal drug use and delinquency, for example) or with other health-related behaviour patterns (such as poor nutrition, poor dental hygiene, accidents or lack of physical activity). They established that smoking by young people was directly and strongly associated with other forms of problem behaviour, whereas any relation it bore to other health-related behaviour patterns was only indirect. This has significant implications for intervention aimed at preventing smoking, which, rather than concentrating on health-related messages, should take account of the factors influencing problem behaviour among young people.

2.3 Theories for measures geared to the family and the school system

How does it come about that some young people tend to surround themselves with friends who consume substances, thereby providing themselves with models and reinforcement for their own consumption, while others do not? Central to the theories that seek to answer this question is the concept of lack of attachment to conventional values and to institutions and agents of socialisation that disapprove of substance consumption (Elliott *et al.* 1989; Hawkins and Weis 1985).

Theory of social control

According to the **theory of social control**, lack of attachment to a conventional parental home and to school leads young people to look to unconventional peers, who serve as models for problem behaviour. Causes of this lack of attachment are considered to lie in the young people's environment: they include the gap between individual goals and the possibilities offered by the environment, incapacity on the part of social institutions to exercise control, and absence of education in traditional values (Elliott *et al.* 1989).

Theory of social development

Hawkins and Weis (1985), in their **theory of social development**, observe that young people develop relationships with deviant peers principally when a) there has been little scope for positive interaction at an early age in the family or at school, b) individuals have managed to develop few interpersonal or academic capabilities that actually lead to positive interaction, and c) family and school interaction has generally been experienced somewhat negatively.

Social ecological model

Other theories, focusing more on individual aspects, postulate that young people turn away from family and school and thus from traditional values if they experience

subjectively increased stress in those settings or are unable to meet their expectations (the '**social ecology model**', Kumpfer and Turner 1990-91; Kaplan *et al.* 1984). Such young people then attach themselves to relatively deviant peers, because they can give them emotional security and self esteem (Kandel 1983).

According to these three strands of theory, addiction-prevention measures should work towards a situation where positive interaction can take place in the family and at school; children and young people can feel good at home; and social control is exercised, both in the form of monitoring – with parents knowing how and with whom their children are spending time – and in the form of non-tolerance of, and constructive sanctions for, misbehaviour.

2.4 Theories for measures concerned with mass media

Two theories that differ greatly in their aims, although both inform mass media measures, are the agenda-setting perspective and the elaboration likelihood model.

Agenda setting

The **agenda-setting perspective** works from the premise that mass-media campaigns do not so much influence what we think as what we reflect upon (see Wakefield *et al.* 2003). Research is directed at establishing whether representation in the media affects priority setting by public opinion and how much it influences the political agenda. Researchers are also interested, on the other hand, in exploring which factors lead the media to report on specific themes. Agenda setting for purposes of addiction prevention means making addiction and prevention subjects of public discussion and a focus of political action.

Elaboration likelihood model

The ways in which persuasive mass-media messages are processed so as to be capable of influencing consumer behaviour is depicted by the **elaboration likelihood model** (ELM) (Petty and Cacioppo 1986). The authors postulate two routes whereby negative advertising can affect attitudes and behaviour: a central route and a peripheral route. The central route demands greater cognitive effort (attentiveness, reflection against the background of one's own convictions, and assessing the merits of arguments) and leads to a comprehensive judgement about the message, which then becomes part of the person's opinions and is thus capable of effecting change in attitudes and behaviour. The peripheral route, by contrast, demands no great effort of scrutinising the message; instead, irrespective of its content, the credibility and attractiveness of the person delivering it becomes the basis on which it is accepted or rejected. The ELM postulates that attitude change via the central processing route is more stable over the longer term and more likely to lead to changed behaviour. Addiction-prevention campaigns should therefore strive to use the central route (Agostinelli and Grube 2002), while elements of the peripheral route (e.g. use of models attractive to the target

group) should be employed in order to motivate the target group for central-route processing of the message. Wakefield *et al.* (2003) discuss theoretical and empirical work concerning the influence of the media on smoking behaviour and put forward the following conclusions about processes through which the media can potentially have an impact:

- the media appear to both shape and reflect social values about smoking;
- the media provide information about smoking directly to audiences;
- the media act as a source of observational learning by providing models which teenagers may seek to emulate;
- the media offer direct reinforcement for smoking or not smoking;
- the media promote discussion about smoking;
- the media can influence 'intervening' behaviour that encourages smoking (parents, for example, can be prevented from giving their children access to cigarettes);
- the media can put the subject of smoking prevention on the political agenda (at municipal, regional and national level);
- any media influence on young people's smoking behaviour is dependent on a multiplicity of individual, family, peer-related and social factors.

2.5 Theories for cross-system and community-related measures

There are two types of community initiative. The first involves cross-system, multilevel projects that simultaneously implement a range of components, including family-orientated, school-based and mass-media measures. Most of these projects are based on the theory of the ecology of development. The second approach, involving promotion of networks, is referred to as building 'community capacity'.

Theory of the ecology of development In the theory of the ecology of development (Bronfenbrenner 1981) substance consumption is seen as behaviour in a social context. Individuals are interconnected within and among various social systems, which also cross-influence one another. These systems, or worlds, include the family, school, workplaces, peer groups, church, leisure organisations and the media. They are characterised by factors which directly or indirectly (i.e. via other members of the system) affect the behaviour of children and young people. Community and social systems are part of a wider ideological context. Their components tend to be more abstract – values, standards, socio-political rules, cultural patterns and social conditions etc. – and to have a particular influence on the way in which the different worlds interrelate. Thus the extent to which a young person, a family or a school functions, and may be regarded as sound or competent, will be influenced by a number of interdependent worlds. This means that efforts at addiction prevention should take account not just of a single context but of a range of worlds and settings and the ways in which they affect one another.

Community capacity The importance in everyday life of good social cohesion is reflected in various constructs – **community capacity**, social capital, community assets and community building (Stevenson and Mitchell 2003) – in the relevant literature by English-speaking authors. Common to them all is the assumption that strong community networks and institutions are not only important for the resolution of existing community problems, but they also foster the long-term health of the population. Some authors regard community networks as a necessary precondition for developing, implementing and sustaining effective prevention. Others work from the premise that the very existence of strong networks and associations constitutes a protection factor for individuals by serving to cushion stressful experiences or to lend meaning to life. The latter view is represented for example by the salutogenesis perspective (Antonovsky 1997, cited in Bengel 2002).

2.6 Theories for legal measures

Punishment theories

One reason for the enactment of laws, rules and regulations is to safeguard public health and the wellbeing of individuals. Failure to observe the rules may attract sanctions or punishments. There are two distinct types of punishment theory – absolute and relative – concerning the legitimacy and purpose of punishment. While the ‘absolute’ theory of punishment contends that punishment furthers no purpose and that penalties merely serve to restore justice, so-called ‘relative’ theories of punishment are concerned with prevention (Ostendorf 1999). Their contention is that penalties are imposed in order to deter others from similar actions (negative general prevention), to restore a damaged general consciousness of rectitude (positive general prevention), to deter individual perpetrators from reoffending or to protect society from them (negative individual or special prevention) and to exert a positive influence on individual perpetrators, to resocialise them and thus to prevent reoffending (positive individual or special prevention). All this suggests that society can be protected from behaviour that is damaging (in this case to health) through the introduction of legal measures (age restrictions for consumption and purchase of substances, for example, or advertising bans and blood/alcohol limits for drivers) and the monitoring of their observance. The design of prevention measures would be assisted by research to indicate how laws should be formulated in order to make prevention effective.

Economic perspective

It is possible to influence the price of substances through legal measures, including increases in rates of duty. The economic perspective on substance consumption predicts future consumer behaviour on the basis of pricing (see Chaloupka *et al.* 2002). The concept of → price elasticity assumes that consumption falls when prices rise. Becker and Murphy (1988, quoted in Chaloupka *et al.* 2002) extended this perspective to embrace addiction as an aspect of substance consumption. They postulate that current consumer behaviour depends on previous behaviour and influences future

behaviour. This means that a price increase will affect not only current but also future consumption, and this in turn will be reflected in greater price elasticity.

2.7 Theories for addressing specific target groups

Theory of antisocial behaviour

There has been much recent discussion about the introduction of addiction-prevention measures that target specific groups of young people. Specific measures require specific theoretical explanations of different development paths. Moffitt (1993) postulates at least two development paths in relation to **antisocial behaviour**. Her theory (1993), which has now been embraced by non-clinical research into youth substance consumption (Silbereisen 1999), draws a distinction between problem behaviour that is confined to youth and behaviour that finds expression throughout a person's life according to his or her stage of development. For most young people (approximately 90%), problem behaviour confined to youth functions as a means of bridging the painfully experienced gap between the physical status of adulthood and the ongoing dependency (chiefly financial) which constitutes a barrier to independent adulthood. Substance abuse thus becomes a demonstration of adulthood. With the minority (up to 10%) for whom problem behaviour endures throughout life, substance consumption needs to be understood as an expression of adjustment difficulties that have persisted since childhood and cause enduring harm. The original causes are apparent in marked neuropsychological traits in early childhood. These lead to temperamental peculiarities and behavioural adjustment disorders, which in turn prejudice interactions – within the family, at nursery school and school and in leisure activities – that are important for healthy development, ultimately evolving into an 'antisocial syndrome' with a range of behavioural manifestations (Moffitt 1993). Substance abuse is then an age-typical expression of a long-standing problem. For the minority of young people who manifest the relevant traits in childhood, addiction prevention may take the specific forms of early identification and educational, social-pedagogical or therapeutic measures to influence behavioural disorders.

Gender-related theoretical perspectives

The need for addiction prevention to take account of gender informs a further type of specifically targeted approach. Amaro *et al.* (2001) combine seven theories to postulate a basis for gender-specific intervention addressing the needs of girls. They propose that a gender-based intervention model should take account of the following key points:

- gender-specific socialisation (cultural or social norms that reinforce traditional masculine or feminine behaviour);
- gender-specific development paths (age-specific and gender-specific development tasks and milestones);
- the promotion among girls of feelings of self-esteem, dignity, power, hope, virtue and capability as well as self assertion;

- the tendency of girls to react through internalisation (reflected in depression and eating disorders) and to be strongly influenced by relationships (the key concepts here are impressionability and the significance of others in conferring identity);
- women's greater vulnerability to mental, physical and sexual abuse;
- the possible reinforcement of relationships that are significant for development, and the question of coping with imbalances of power in such relationships (i.e. in the family and between partners).

3. METHODOLOGY

3.1 Connecting thread for a theoretical understanding of the collected results

The resilience perspective, as part of the ecology-of-development approach (Meschke and Patterson 2003), provides the connecting thread for contextualisation of the report's results on addiction prevention.

Substance consumption occurs in a social context: that is the central tenet of the ecology-of-development approach. It is rare for a single factor to constitute the cause of complex behaviour such as substance consumption. This is because individuals live within a number of worlds (settings or social systems) which cross-influence one another (Bronfenbrenner 1981). The various worlds are characterised by → risk factors and protection factors that affect the behaviour of children and young people (including their consumption patterns) either directly or via other members of the system. Systems in which young people are directly active are first of all the family then the peer group and school. At community level young people may also be active within churches and sports clubs or other leisure organisations. Interactive exchange with media is a further possibility in today's world. Society can be understood as an extension of the community, albeit less open to influence by individuals and their families. Individuals, family, community and social systems are all part of a broader ideological context, the elements of which are generally more abstract: e.g. values, standards, socio-political rules, cultural patterns, social circumstances etc. The extent to which a young person, a family or a school functions, and may be regarded as sound or competent, is influenced by the ideological context, by interaction among the different worlds in which the young person lives and by those worlds themselves.

The term 'resilience' describes the processes whereby an individual, a family or a community confronted by severe damage or high risk can nonetheless adapt or function successfully (Luthar *et al.* 2000). Resilience should not, therefore, be understood as a personality trait but rather as a number of processes that can be conclusive when the system in question holds together effectively despite severe difficulty or sustained risk (see Section 2.1).

From this perspective, addiction prevention means promoting processes that can build resilience within systems and disabling those system components that represent a risk leading to the negative outcome of substance abuse – the ultimate aim being to prevent substance abuse by individuals. The theoretical perspective of resilience processes within a developmental ecosystem offers a broad basis in terms of starting points and content. With regard to the distinction between universal and selective measures, it is possible to consider these as two ends of a spectrum. The universal target group is distinguished by a wide range of characteristics and configurations of → risk factors and protection factors.

The selective target group is more homogenous and less favourably positioned in terms of exposure to risk; thus, in the configuration of factors, it is likely that risk factors will

predominate. The risk-prevention measures selected for assessment in the study are categorised by the different worlds in which children and young people grow up. The results are compiled according to the various starting points for research: the family, school, peers, the media, community, and legislative measures within social systems. This is the form of categorisation applied in many reviews and it also reflects the different fields of activity that can be tackled by those responsible for addiction prevention.

3.2 Assembling the literature base

Bearing in mind the questions that the report addresses, the following criteria were established for the selection of studies:

- **Types of study:** we began by selecting → high-quality systematic → reviews and → meta-analyses. Unsystematic → reviews and individual studies were then included where no high-quality review article was found on a particular area of content. The search was limited to studies published after 1993 (when the last report appeared).
- **Measures:** the studies present findings on the effectiveness of addiction-prevention measures. They document research into the effectiveness either of so-called circumstantial prevention efforts – e.g. the imposition of penalties or public-order regulations on consumption and possession, controls on availability (including restrictions on sale), price regulation and other circumstantial measures (publicity drives and networking) – or of what is termed behavioural prevention in settings such as school, family, the media, the world of leisure or the community.
- **Target groups:** studies were selected in which the sample groups were children, teenagers and young adults aged up to 25. Research concerning both the population generally (i.e. on universal measures) and high-risk groups (i.e. on selective measures) was included.
- **Target behaviour:** the selected studies reported results on preventing initial consumption, on reducing consumption and on preventing the development of dependency. Included were studies reporting the effects of preventive efforts on the consumption of psychoactive substances such as tobacco, alcohol and cannabis, as well as ecstasy and other illegal drugs.

3.3 Search strategy for identifying review articles

The search strategy for the report entailed determining keywords and choosing databases for literature research, followed by methodical implementation of the search itself. The strategy was designed with reference to established Cochrane Library standards (Alderson *et al.* 2004).

Determining keywords

In line with the selection criteria (see Section 3.2), keywords were identified for a literature search covering six dimensions (target group, substance, measure, target behaviour, evaluation and type of study). Table 2 shows the key concepts and associated concepts (marked *).

Selection of databases

The databases chosen for the literature search concentrate on reviews and meta-analyses and cover both international and national publications:

Table 2: Key concepts

Target group	Substance	Measure	Target behaviour	Evaluation	Type of study
child* adolescen* teenage* youth* young people early adult young adult	substance smok* tobacco nicotine alcohol drug marijuana marihuana cannabis illicit ecstasy amphetamine psychoactive	intervent* program* treatment* campaign policy policies legislation educat* promot* adverti* counsel* teach* school family community	use misuse abuse onset reduc* prevent* increas* decreas* chang* cessation abstain* stop intoxicat* uptake addict*	evaluat* success* effective* efficac* measur* examin* compar* trial* rct *	meta-analysis review

* Words associated with the keyword were also included, hence in some cases only the word stem was used as a search term in the databases.

- The Cochrane Library,
- Database of Abstracts of Reviews of Effects (DARE),

- ERIC,
- PubMed,
- PsycInfo,
- Psynindex,
- Dimdi.

The ARCHIDO archives for drug-related literature were trawled for further ‘grey’ material, and the publications lists of relevant international and national institutions – including the World Health Organisation (WHO), the National Institute of Drug Abuse (NIDA), the National Institute on Alcohol and Alcoholism (NIAAA), the Centres for Disease Control and Prevention (CDC), the Federal Centre for Health Education (BZgA), the Trimbos Institute, and the Swiss Centre for Alcohol-related and other Drug-related Problems (SFA-ISPA) – were also checked. The quest for relevant material was further assisted by the research partners of the Federal Ministry for Education and Research (BMBF) specialising in literature searches (ANEPSA and ASAT).

Identifying and gathering the literature

The literature search took place between November and December 2003. The key concepts (see Table 2), in different combinations, were entered in the various databases as search terms, the search being confined to articles published from 1993 onwards. The publications lists of the above-named national and international institutions were searched via the Internet. Following the cascade principle, the references included in the studies identified were checked for further relevant material. Bibliographic details of the literature found were compiled and managed using the Reference Manager software.

3.4 Final selection of review articles

Final selection of the reviews and meta-analyses to be included in the study was a two-stage process. An initial rough selection was made by a junior researcher, who identified for further checking only those publications that met the necessary content and methodology criteria. This stage produced a collection of 269 publications. The second stage involved a senior researcher checking the abstracts of the publications in this data pool and retaining those which appeared relevant. Finally two senior researchers selected the articles, the results of which form the basis for the report. Their selection of relevant-content material was categorised as follows: → meta-analysis (M); systematic or unsystematic → review (S or U); →expert survey (E); → best-practice survey (BP). In every case the individual studies referred to were also assessed. The intention was to use articles that summarised individual studies rather than → reviews. Due to a shortage of overview-type publications on the theme of advertising bans, an isolated individual study (IS) was included. Altogether 48 publications were selected for the final evaluation: one of them included two reviews of different measures, hence we refer to a literature base of 49 publications.

3.5 Evaluation of the review articles

In order to classify and assess the content of the studies identified, a coding system and a conclusiveness-evaluation system were developed. Two senior researchers familiar with the subject matter checked the studies and independently classified them according to content and method.

Coding system

The descriptive dimensions on which the coding system is based reflect the questions that the report addresses. They cover content-related aspects of the work, such as the target group, the substance concerned, the measure and the target behaviour, as well as methodological aspects. All the review articles were described in terms of these dimensions. Table 3 sets out the key questions asked in relation to each dimension.

Outcome variables

The report's outcome variables are → preventive effects on consumption behaviour. This term covers the prevention, delay or reduction of consumption. Because very few individual studies or reviews distinguish between these three possible types of effect, it was impossible to draw such a distinction in the report. It would be interesting to know whether a specific measure simply prevents people from starting substance consumption, delays the start of consumption or reduces existing consumption. To date, such information is not available.

Target group	Is the study concerned with a universal or a selective target group? Which age groups are covered? What is the background of the target groups?
Substance	About which psychoactive substances or groups of substances can information be drawn from the study?
Measure	What preventive approaches and/or procedures does the study cover?
Target behaviour	About what types of target behaviour can information be drawn from the study? Does the target behaviour involve actual substance consumption or the exertion of influence on risk and protection factors?
Type of study and method of implementation	Is the study a meta-analysis or a qualitative review? How many individual studies does it cover? What is their quality level? Were the studies covered selected systematically or unsystematically? Over what time period were they conducted?
Evaluation of methodology	Is there a transparent process of selection and evaluation of the individual studies? Has a stringent and conclusive approach been taken in the collation of the study results, the selection of outcome variables and the choice of statistical procedures for assessing and deriving conclusions?

Table 3: Dimensions of the coding system and key questions

Conclusiveness-evaluation system

The system used to evaluate the conclusiveness of the review articles needed to be modelled on tried and tested mechanisms and standards for guideline development (Alderson *et al.* 2004; Fiore *et al.* 2000; Helou *et al.* 2000). In accordance with current international standards (Helou *et al.* 2000), the following requirements had to be met with regard to conclusions drawn:

- a) systematic research into, assessment of and summarising of the best available scientific evidence (systematic → reviews and possibly → meta-analyses);
- b) derivation of the procedure recommended in the conclusion from the scientific evidence;
- c) detailed documentation of the connection between specific conclusions and the relevant evidential step;
- d) production of a background report to assure the quality of guideline development (after Helou *et al.* 2000).

The clinical epidemiology evidence-classification system that is widely used nationally and internationally (Shekelle *et al.* 1999) did not lend itself to meaningful application in evaluating our review articles and international prevention research. Under that system, only one category is deemed to be conclusive for assessment of collected information: the strongest evidence (level I a) is considered to come from a → meta-analysis of → random controlled trials (i.e. → high-quality individual studies). The next level identified is that of individual studies (evidence level I b, → random controlled trials), a level which our literature does not cover. Level II a is the classification for evidence in which at least one of the controlled trials is not → randomised, and level II b is applied where at least one trial uses a quasi-experimental approach (for example ‘before’ and ‘after’ testing). Level III covers descriptive, comparative or case-control trials and level IV comprises the findings of committees or groups of experts.

Classification on the clinical epidemiology pattern would have produced a form of blanket coverage, given that → random controlled trials are available in virtually every relevant area. Such a classification also fails to take account of the type of mixed or partially contradictory bodies of evidence which are found in addiction prevention and which review articles attempt to organise and assess.

For these reasons we developed our own system of conclusiveness assessment. Our conclusions are based on → meta-analyses (M), systematic → reviews (S, offering the possibility of identifying every available study), unsystematic → reviews (U, in which the criteria for identifying and selecting individual studies are not clear), → expert surveys or interviews (E, in which either questions are put to experts, or the article was written by a recognised expert), → best-practice surveys (BP, a specific presentation of effective measures) and individual studies (IS, offering indications of effectiveness in fields about which no information would otherwise be available).

High-quality individual studies were considered to be studies which reflected the most meaningful research design. Such studies entail comparison between a treated and an untreated group, preferably with random allocation of those involved into the treatment and → control groups (i.e. → randomisation). Data are then gathered from the group at least before and after treatment and preferably also at a later date. This is the pattern for both → randomised controlled trials (RCTs) and controlled trials without → randomisation (→ CTs). A further type of study, the → interrupted time series (ITS), can be used where comparison between a treated and an untreated group is not possible. In these studies a given group is questioned, an interval then follows without treatment and the same questions are asked again. After a further interval in which treatment is given, the questions are asked for a third time. This permits comparison of how the same people progress with and without treatment. Review articles do not always indicate the nature of the individual studies on which they draw; such information can thus be reported and considered only when it is available.

The conclusions are rated for strength of evidence from A to F, according to whether they are based on:

- A) a → meta-analysis involving high-quality individual studies (→ RCTs, → CTs and → ITSs);
- B) a systematic →review involving high-quality studies (→ RCTs, → CTs and → ITSs);
- C) a → meta-analysis or systematic → review covering all relevant studies;
- D) an unsystematic → review, → expert survey or → best-practice survey;
- E) a discussion of an individual study or results on the basis of empirical evidence that does not provide direct information on the results or test them; or
- F) a contradictory body of evidence from reviews in categories A to C, with a conclusion tending towards the most persuasive review.

If we sought to parallel this system – ignoring the different levels of analysis involved (reviews as against individual studies) – with the commonly used scheme for classifying clinical evidence, we would suggest that conclusiveness level A most closely resembles category I a, although it includes all high-quality studies (→ RCTs, → CTs and → ITSs). Conclusiveness levels B, C and to some extent D (unsystematic → review) coincide with categories I b, II a and II b. Category IV is covered by our conclusiveness level D.

4. RESULTS

4.1. Structure of the results and conclusions sections

The results and conclusions sections bring together, firstly, results and conclusions about universal measures, which are organised by field of intervention (family, leisure, school, media, community, legislation and regulations): these appear in Section 4.2. There then follows an outline of results and conclusions across different fields of intervention in relation to selective measures, gender-related research, negative outcomes of addiction-prevention efforts, and individual substances: this material appears in Section 4.3).

There is a standard structure for the results and conclusions sections. The ‘results’ sections contain both results and conclusions formulated by the authors of the articles referred to in each. The ‘conclusions’ sections present conclusions about effectiveness – both by field of intervention and across different fields – which were formulated by the authors of this report, and they represent its principle contribution.

Results sections

Results are grouped under four headings: according to their content (effectiveness or key elements), the target group about which conclusions are drawn (universal or selective), the field of intervention (family, school, media, community, legislation and regulation) and the substance concerned (tobacco, alcohol, cannabis or other illegal drugs). Because many reviews do not differentiate between target groups, fields of intervention or substances, but instead assess several groups, fields or substances jointly, there is a further category labelled ‘undifferentiated’. The characteristics of each set of results are indicated in grid form, as illustrated.

Example of a grid identifying a set of results:

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	UNIVERSAL Selective Undifferentiated	Family SCHOOL Leisure Media Community Laws and regulations Undifferentiated	Tobacco Alcohol Cannabis Other illegal drugs UNDIFFERENTIATED

The example is for results concerning school as the field of intervention, with a universal target group and no differentiation by substance with regard to the effectiveness of the addiction-prevention measures in question.

In the ‘results’ sections, the summary of each article from which conclusions have been derived has a heading indicating the article’s focus. The summary then starts with a brief characterisation of the article, listing the following: author or authors; an article reference number for purposes of this report; date of publication; type of article (M: → meta-analysis, S: systematic → review, U: unsystematic → review, E: → expert survey; BP: → best-practice survey; IS: individual study); the number of studies on which the results about addiction prevention are based, plus (if known) the total number of studies identified but not selected, with an indication, if possible, of their design [RCT: → randomised controlled trial, → CT: controlled trial, → ITS: interrupted time series]; and the period over which they were published. The results and conclusions of the study are then described separately. The description of results presents what is reported by the author(s) of the articles and what the compilers of this report consider relevant and cogent. Conclusions contained in the ‘results’ sections reproduce the opinions of the authors of the articles (generally in their own words), rather than those of the report’s compilers.

Conclusions sections

Each ‘conclusions’ section begins with information about the substances concerned in the particular field of intervention, and an indication of whether German-speaking sample groups were used in the studies referred to. There follows a summary assessment of methodological quality and of the meaningfulness of the results on which the conclusions are based.

Next follow the conclusions which, **in the opinion of the report’s compilers**, summarise the reviews presented in that section. Each conclusion is followed by a letter and the article reference number: these indicate, respectively, the strength of the evidence and the work on which the conclusion is based. The meaning of the letters is as follows (see Section 3.5):

- A conclusion based on a → meta-analysis involving high-quality individual studies;
- B results from a systematic → review of high-quality individual studies;
- C results from a → meta-analysis or systematic → review covering all relevant studies;
- D results from an unsystematic → review, an → expert survey or a → best-practice survey;
- E discussion of individual study or results on the basis of empirical evidence that does not provide direct information on the results or test them;
- F contradictory body of evidence from → reviews in categories A to C, with a conclusion tending towards the most persuasive review.

Lastly, where possible, the conclusions are followed by quantitative indications of the effectiveness of the measures concerned. These are derived from the articles and are intended merely as very broad estimates of the limits within which the measures’ effectiveness may fluctuate. They should not be interpreted as effects to be anticipated.

4.2 Effectiveness of prevention measures in different fields of intervention

4.2.1 Family – results

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	Universal Selective UNDIFFERENTIATED	FAMILY School Leisure Media Community Laws and regulations Undifferentiated	Tobacco Alcohol Cannabis Other illegal drugs UNDIFFERENTIATED

Focus: general effectiveness

Lochman and van den Steenhoven [1; 2002; S; 30 studies, of which 18 RCTs; 1970–2000], in their → review, researched family-based prevention programmes and their effectiveness on substance consumption. They divide family prevention programmes into parental training, training for children, family training and combinations of these. The various types of training focus on developing basic educational behaviour (use of discipline, supervision and problem solving) and on fostering parent-child relationships as well as parental commitment to the child's schooling. The programmes that involve children include exercises in how to resist peer offers of substances for consumption, social problem-solving abilities, conflict management and learning skills. Due to a shortage of studies, the authors discuss universal and selective approaches jointly. The review also resumes a large number of studies concerning indicative procedures, which we do not propose to discuss here. Results: parental training (nine studies) leads to improved educational behaviour or to a reduction in problem behaviour on the part of children. The effects generally continue to be observable at follow-up. Skills training for parents and families (11 studies) is effective with regard to pro-social behaviour by children and, according to three studies, with regard to their substance consumption. Some types of parental training and training for children (two out of four studies) were effective inasmuch as educational behaviour improved, opposition behaviour by children declined and a reduction in alcohol consumption was noted. More comprehensive approaches (six studies) – with components for parents, children and families – produced effects in various areas of parent and child behaviour, including aggression on the part of children, behaviour in class and alcohol consumption. **Authors' conclusion:** in summary, the authors deduce from the study results quoted that universal and selective programmes have positive effects on parents, children and families and on substance

consumption (among children, there were effects on aggression, delinquency and attachment to school, and greater peer acceptance and greater emotional warmth towards parents were also observed; among parents, the exercise of discipline was affected, and boundary setting, less severe punishment, better problem solving and acceptance of children were observed; at family level, family relationships, family conflicts, cohesiveness, problem behaviour and substance consumption were all affected). These approaches had positive effects on patterns of starting alcohol consumption and its development – particularly among subjects who were not alcohol consumers when the intervention began – and the effects could be sustained for up to three years. The authors conclude that while parental training in itself influences children's behaviour, additional work with children or entire families promises more far-reaching effects on a larger number of influence factors. Parental training should focus on helping parents to interact with their children in a more positive and observant way and to use social reinforcement and constructive disciplinary measures. It is also important here to use interactive training methods.

Focus: general effectiveness

Loveland-Cherry [2; 2000; S; 13 of 92 studies; 1990–1999] evaluated family involvement in addiction prevention. She examined three community-based and four school-based multi-component projects and seven programmes exclusively for families. Results: of the seven initiatives (including four → RCTs) geared solely to families, three showed positive effects on various alcohol-related variables. **Author's conclusion:** the author concludes, with regard to all three of these family-orientated initiatives, that the interventions and studies are impressive in terms of their target variables, application of theory-based strategies, strength of research design, degree of variety in sample groups and demonstrated effects. The studies tended to indicate short-term effectiveness, with fewer long-term findings. The idea that intervention is more effective with groups at risk was further supported.

Focus: pre-school children

To the best of our knowledge there exists just one →review of addiction-prevention measures for pre-school children and it is somewhat inconclusive in the absence of (good) studies. We mention it here because it focuses on the family-orientated approach. **Hall and Zigler [3; 1997; S; 11 studies; all available programmes]** cover 41 prevention programmes available in the USA for three to five-year-old children, but only 11 studies have been evaluated at all and the evaluation falls short of the required standard; in addition, the outcome variables are limited (generally to self-esteem and substance recognition). Only two of the programme evaluations have been published in scientific journals. Results: most of the projects have virtually no empirical basis for their programme content, and do not include any effectiveness monitoring or any work with parents; nor are any criteria stipulated for the selection of particular programmes. Instead, it appears to be left to chance which measures are implemented. The authors

say there is no indication that the programmes are ineffective. ‘Before’ and ‘after’ tests, carried out under a number of makeshift evaluation systems, indicate that children receive a certain amount of knowledge about drugs and the anti-drug message at least in the short term. The validity of these conclusions is, however, dubious, as is their sustainability in the long term. **Authors’ conclusion:** such being the status of the available data, the authors fall back on theory and empirical results concerning other areas of behaviour, asserting for example that the required approach for pre-school children has been learned from work on the prevention of anti-social behaviour. Accordingly, preference should be given to family-orientated measures, and wide-ranging, multi-modal programmes should be implemented, targeting either parents or parents and children. Participation in a family-orientated initiative increases the likelihood of children having positive experiences at home, at school and in other social contexts. An individually focused approach makes sense with children of this age only as a means of reinforcing or correcting the influence of the parental home.

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	Universal Selective UNDIFFERENTIATED	FAMILY School Leisure Media Community Laws and regulations Undifferentiated	Tobacco ALCOHOL Cannabis Other illegal drugs Undifferentiated

Focus: alcohol

Bry et al. [4; 1998; BP; 3 studies; 1980–1999] address a number of issues in family-orientated prevention with reference to individual studies, and draw preliminary conclusions about selected family-based prevention programmes with different target groups and from different theoretical perspectives. **Authors’ conclusion:** it is possible to alter family behaviour and educational behaviour and to reach families. Mothers and fathers should be involved. It is possible to influence factors that contribute to substance consumption (in this case, children’s behavioural problems). It is possible to reduce substance consumption by parents. There are, however, also negative results (negative influence on family behaviour; older children spending less time with the family). Effectiveness in relation to children’s substance consumption is not proven because ‘sleeper effects’ (delayed effects on substance consumption and risk factors) were to be expected.

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
Effectiveness KEY ELEMENTS	Universal Selective UNDIFFERENTIATED	FAMILY School Leisure Media Community Laws and regulations Undifferentiated	Tobacco Alcohol Cannabis Other illegal drugs UNDIFFERENTIATED

Focus: expert surveys

Dusenbury [5; 2000; U; 4 experts] discusses the methodological problems of evaluating intervention with families, basing her conclusions on selected literature and interviews with acknowledged experts in the field of family-based prevention work. She makes no differentiated assessments of effectiveness but instead deals collectively with key elements of effective family-orientated prevention. **Author's results and conclusion:** effective measures have a number of distinguishing features. With regard to content, they are based on empirically confirmed theories (social learning theory, the theory of social control and the ecology of development) and on the results of research. The programmes concerned work to achieve a positive relationship between parents and children and to assist parents in developing anti-consumption standards within the family. To ensure that children adopt these standards, the programmes promote attachment to parents. They offer training in communications skills, conflict resolution and stability. Many measures instruct parents in positive and consistent discipline and how to monitor and supervise their children. In many cases, families with younger children are given the opportunity of alternative family activities, while those with older children tend to receive communication training. Further key elements of successful family-orientated prevention programmes are comprehensiveness and early intervention, lifelong application and a focus on multiple → risk factors and prevention factors for consumption, with intervention in a range of systems (not only home and school but also, where necessary, social services, parental networks and leisure provision). Successful prevention programmes should be geared to the children's stage of development and sensitive to the changing needs of families and parents (motherhood, for example, and children's transition from primary to secondary-level schooling). Measures should be tailored to specific cultural backgrounds and communities, notably with regard to the individuals who function as mediators for them. Although the minimum required intensity of family-orientated measures has not yet been determined, the programmes should also last long enough to achieve the desired behavioural change, and this includes allowing for developmental aspects. Interactive techniques to develop new skills should be employed in this regard. Those responsible for delivering programme content should receive training and support. Finally, assessment of the programmes in action is important in order to determine whether they have had the intended effect or whether procedures need to be altered.

The major challenge for family-orientated prevention is the problem of recruitment – i.e. motivating families in need to participate in programmes.

Focus: further key elements

Lochman and van den Steenhoven [1; 2002; S; 30 studies of which 18 RCTs; 1970–2000] identify possible ways of increasing families' participation: a) by selecting a venue with which families are familiar; b) by offering childcare and transport; c) by promoting cohesion among the families involved, i.e. encouraging them to share their experiences, creating informal support networks in the group and taking parents' ideas on board; and d) by offering 'good' programmes.

Focus: families who are hard to reach

Bry et al. [4; 1998; 2 studies; number not supplied] report on an empirically tested motivation strategy for use with families who are hard to reach. An approach that has proved useful with hard-to-reach families is that known as 'strategic structural systems engagement', in which resistance is understood as a symptom sustained within the family system by the established pattern of interaction. Thus, before substance-related problems can be tackled, this resistance needs to be addressed – using similar family-therapy methods. If the resistance is overcome in the first phase of treatment and the family members decide they are ready for therapy, then the problem itself can be therapeutically addressed. Two studies compared this programme with a control approach using conventional recruitment procedures. **Results:** with regard both to motivation for participation in further family therapy and to ultimate rates of non-participation, 'strategic structural systems engagement' scored higher than the control approach.

4.2.2 Family – conclusions

Substances: alcohol is the dominant substance in the research, with virtually no results in relation to tobacco or illegal drugs

Geographical scope: no reviews of research using German-speaking sample groups

Conclusiveness: levels C and D. While there are numerous → RCTs, there are no → reviews of high-quality studies and no → meta-analyses.

- **Comprehensive family-orientated approaches (training for parents, children and whole families) have → preventive effects on consumption behaviour (in relation to alcohol). C^{1,2}**
- **Parental training alone influences risk factors but not consumption. C₁**
- **Family-orientated measures are particularly effective with non-consumers (of alcohol). C¹**
- **Characteristics of effective measures are: a focus on the promotion of positive parent-child interaction, training in the social-reinforcement approach and constructive discipline (C¹); interactive training methods (C¹, D⁵); an empirically confirmed theoretical basis (D⁵); mediator training (D⁵); evaluation (D⁵); comprehensive intervention that starts at an early age, continues throughout life, addresses numerous → risk factors and protection factors and embraces several settings (D⁵); material tailored to different stages of development (D⁵); attention to cultural and community context (D⁵); and sufficient treatment and follow-up (D⁵).**
- Impact on consumption behaviour and on risk factors is delayed (so-called sleeper effects). D⁴
- Measures to involve hard-to-reach families are successful. D⁴
- Negative effects on risk factors cannot be ruled out. D⁴
- Preventive measures for pre-school children (aged 3-5 years) should be family orientated. E³

Quantitative indications: none

4.2.3 School – results

School-based measures seldom address the school context; in most cases they are concerned with individual factors. In other words, school as a field of intervention is a setting for measures which address individuals.

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	UNIVERSALL Selective Undifferentiated	Family SCHOOL Leisure Media Community Legislation and regulations Undifferentiated	Tobacco Alcohol Cannabis Other illegal drugs UNDIFFERENTIATED

Focus: general effectiveness

The most comprehensive → meta-analysis in the field of addiction prevention is the work by **Tobler and Kollegen [6; 2000; M; 144 of more than 700 studies (93 high-quality studies); 1978–1997]**, who reviewed studies of more than 207 programmes. They categorise school-based programmes according to the methods used to convey their content. Non-interactive programmes are characterised by a lack of interaction among the pupils and by one-way communication between a mediator and individual pupils (e.g. didactic teaching). Interactive methods encourage pupils to engage with the subject matter (for example in small-group discussions or through role play) assigning no more than a moderating function to the mediator. The results variable extracted from the studies was 30-day prevalence. **Results:** for non-interactive programmes the authors calculated an → impact of .05 (weighted Hedges d); for interactive programmes the calculated impact was .15. By limiting the analysis to high-quality studies, they arrived at impact ratings of .03 and .16. The content base of the programmes cannot be dissociated from their methodology. The following approaches were categorised as non-interactive: one-off provision of information; emotional education; programmes focusing exclusively on the decision-making process, transmission of values and development of attitudes; the combination of information and emotional education and approaches similar to the DARE programme (see below: Ennett *et al.* [8]). Considered individually, the impact rating for all non-interactive approaches was not significantly higher than 0. Approaches categorised as interactive were those which focused on social-influence variables as well as comprehensive life-skills programmes and cross-system intervention (school plus community and/or family and school development, for example). Programmes of this type scored significantly higher ratings – .12, .17 and .27 and, in the case of those based on high-quality studies, .14, .17 and .22. It should be noted here firstly that there are as yet too few evaluated cross-system programmes (n = 9 or n = 3 high-quality studies), and secondly that the categories labelled ‘social influence’ and ‘life skills’ contain statistically very mixed programmes which in fact ought to be differentiated according to other criteria. The meta-analysis also found that small projects achieved greater impact, possibly because, by contrast with large projects, they lend themselves to the creation of better implementation structures. Longer interactive programmes (11-30

hours) are more effective. Professional mediators are the most successful, followed by peers, teachers and others. With regard to a target population, the greatest benefit tends to be derived by pupils under 12 years of age or over 15, and effectiveness does not appear to be influenced by ethnic background. Interactive programmes work equally well in respect of all substances (effect sizes: tobacco .15 [105 values], alcohol .13 [68 values], cannabis .13 [37 values] and other drugs .26 [nine values]). In the case of smoking prevention, specific programmes are better; in alcohol prevention it does not matter whether the programmes focus only on alcohol or also on other substances. The broader the programme design – i.e. the more fields of intervention it includes – the greater the prospects of success. **Authors' conclusions:** with a moderate effect size of .16 in small and large-scale interactive programmes – corresponding to a differential success rate of 8% (i.e. 8% more consumers were to be found in the →control group) – the → percentage difference constitutes a clinically relevant result, particularly given that the average intensity of the programmes is just 12 hours. As an upper limit for the potential effect size of an interactive school-based prevention programme involving approximately five classes, the authors propose a figure of .28, representing a reduction in the absolute prevalence of (for example) smoking from 20% to 13% (relative reduction of some 34%). As a 'realistic' effect size they propose the figure of .14, representing a reduction in the absolute prevalence of (for example) cannabis consumption from 10% to below 8% (relative reduction of 22%).

This latest → meta-analysis by **Tobler *et al.*** Largely confirms the results of previous meta-analyses (1986, 1993). It is worth mentioning, however, the finding in a meta-analysis carried out in 1993 [**7; 1997; M; 90 of 595 studies; 120 programmes; 1977–1991**] that effects are generally stable over the first three years and then decline somewhat. The latest meta-analysis proposes no conclusions with regard to the long-term duration of effects.

Focus: the DARE programme

Ennett *et al.* [**8; 1994; M; 8 of 18 studies; 1986–1994**] used a → meta-analysis to summarise high-quality studies of the DARE (Drug Abuse Resistance Education) programme, which is the most widely used prevention programme in the USA. DARE is delivered in class by police officers and combines information, emotional education and resilience training; Tobler *et al.* [6] classify it, on the basis of its content focus, as a non-interactive approach. **Results:** the effect sizes for alcohol and cannabis consumption are not significantly greater than 0; the rating for tobacco is .08. Higher ratings were recorded for the mediating variables researched: knowledge .42, social competencies .19, attitude to the police .13, attitude to substances .11 and self-esteem .06. The programme did not achieve effects that were either more direct or more long-lasting (over 1-2 years) than those produced by 'ordinary' unsystematic prevention efforts, and the authors attributed this to the traditional teaching style employed. **Authors' conclusion:** DARE scores a lower effect size than interactive programmes (see Tobler *et al.* [6]) and a higher rating than other non-interactive programmes.

Focus: measures that address school systems

Flay [9; 2000; U; 7 studies; number not supplied] reported on the effectiveness on substance consumption of system-orientated school-based programmes. : the evidence was inconsistent on measures to develop the school context (the interaction between teachers and classes or pupils, teaching methods and other changes to the school environment), which could potentially prevent substance consumption by reinforcing attachment to school. There is a mixture of positive results, negative results and absence of results. **Author's conclusion:** there is so far very little evidence for the success of these programmes. A few of the studies (n = 4) are, however, open to criticism on methodological grounds so it is possible that absence of effect could be attributed to the study methods.

Focus: effectiveness of additional components

Flay [9; 2000; U; 7 studies; number not supplied] attempted to compare the effectiveness of exclusively school-based programmes with multi-system approaches (school, plus development of the school context, parental components and media and community-related elements). Results: on the basis of the work he examined (reportedly 'all known' studies), the author was forced to conclude that while there was evidence for the potential effectiveness of parental training and mass-media and community projects there was less proof that such approaches were more effective than school-based programmes, with which they were frequently combined. **Author's conclusion:** this disappointing result is principally due to the fact that, as a consequence of their design, the studies carried out to date do not provide information about differentiated effectiveness.

Focus: German-language programmes

Maiwald and Reese [10; 2000; U; 10 studies (→ RCTs or → CTs), 1990–2000] summarised studies on the effectiveness of German life-skills programmes. At primary level such programmes emphasise the promotion of life skills and health education, with a specific focus for eight to nine-year-olds on smoking. At the orientation stage (early secondary level) there is a substance-specific focus on cigarettes and alcohol. Ecstasy and other illegal drugs are discussed later. Results: there is no consistent proof that young people's consumption behaviour is influenced, although individual studies have shown desired behaviour patterns at least in the short term. Consumption behaviour in the target group generally (and particularly tobacco consumption) was susceptible to influence by programmes that began at an early stage and included a substance-specific focus at least by age 10. Sub-groups benefit from programmes that start at a later age. It was possible to influence expectations about effects and standards, as well as knowledge about and emotional attitudes to substances, to abstinence and to resilience. **Author's conclusion:** life skills can contribute significantly to addiction prevention among young people; as a sole means of preventing substance abuse they are clearly not enough.

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	UNIVERSAL Selective Undifferentiated	Family SCHOOL Leisure Media Community Legislation and regulations Undifferentiated	TOBACCO Alcohol Cannabis Other illegal drugs Undifferentiated

Focus: tobacco

Thomas [11; 2003; S; 76 of 191 studies; 1980–2000] carried out a qualitative, rather than quantitative] review for the Cochrane Library of the results of 76 varied studies of school-based programmes for preventing smoking. He identified three categories for methodological quality, with the highest-quality studies in category 1. The studies covered a very wide range of approaches to tackling smoking behaviour. **Results/author's conclusion:** the results from the top categories in each case are reported in detail here. Four studies (in category 2) used control groups and tested the effectiveness of information giving; one of them demonstrated effects on smoking behaviour. The authors contend that, given the shortage of relevant rigorous studies, this approach cannot be dismissed as ineffective but there is little positive evidence for its effectiveness. 'Pure' social-skills programmes without a specifically tobacco-related component were tested in just one study (in category 1), which reported an effect on young people's smoking behaviour after 24 months. This is too slim an evidence base to be conclusive. Programmes focusing on social influences were tested in 15 (category 1) studies, eight of which reported effects at least six months later. It would thus seem that only short-term effectiveness can be expected, given that the longest and highest-value study (in terms of methodology) showed no effects on smoking behaviour 14 years after the start of intervention (two years after school-leaving age). The combination of social influence and social competence, as translated into life-skills programmes, has so far been researched in one category 1 study and 11 category 2 studies. In the authors' view these indicate that it is possible to influence smoking behaviour. There is, however, insufficient evidence to determine whether additional training in general life skills is more effective than social-influence programmes alone. Likewise there is still insufficient data to assess whether multi-model components (e.g. community elements) result in greater effectiveness than a focus on social influences. Three studies (in category 1) reported contradictory findings.

Tobler *et al.* [6; 2000; M; 144 of more than 700 studies; 207 programmes; 1978–1997], in relation to tobacco, reported an → effect size of .15, based on 105 values, for interactive school-based programmes.

Ennett *et al.* [8; 1994; M; 8 of 18 studies; 1986–1994] reported an → effect size of .08 for DARE in relation to smoking behaviour.

Focus: re-analysis after adjustment of → intra-class correlation

Rooney and Murray [12; 1996; M; 90 of an unknown total of studies; 1974-1991] re-analysed the results of 90 studies in which the degree of randomisation was inappropriate to the level of analysis (intra-class correlation bias). Results: they reported a mean → effect size (Hedges *d*) on smoking behaviour (several variables) of .11 in post-treatment tests and .10 at follow-up, i.e. a reduction of approximately 5%. Each of the programmes analysed focused largely on social influences or general social skills, rather than resilience. Regression analyses were used to determine factors associated with greater effectiveness. At post-treatment testing these were: a longer follow-up interval, → randomisation, observation and feedback to teachers, fewer than 10 sessions, untrained peers as mediators, a focus on more than merely tobacco, and a longer-term duration (> two months). Content design was not a determining factor. At follow-up, the factors associated with increased effectiveness were: intervention with 11-year-olds, equivalent groups for comparison, longitudinal design, 11-20% drop-out rate, a tight timescale with refresher sessions, trained teachers or untrained peers as mediators. **Authors' conclusions:** if all these characteristics were present, effect sizes of .5 to .8 could be anticipated, i.e. a relative reduction of 19-29%. The authors conclude that their → meta-analysis supports the continued use of peers and social smoking-prevention programmes, but further efforts are needed to achieve a significant change in young people's smoking behaviour.

Focus: tobacco use cessation

Sussman *et al.* [13; 1999; U; 17 studies; 1977–1992] analysed a number of representatively selected prevention studies with regard to effects on the cessation of smoking by young people. Results: it is possible to reduce the weekly tobacco consumption of young smokers by some five percentage points over a period of approximately three years through programmes that are actually designed to prevent consumption. **Author's conclusion:** with an accessibility rating of 80-90%, this is largely similar to the effectiveness of dedicated tobacco-cessation initiatives among young people, which reach 40% of the target group and achieve a reduction of approximately 10%.

Focus: long-term effectiveness

Skara and Sussman [14; 2003; S; 25 (→ CTs at least) from an unknown number of studies; 1966–2002] reported on the long-term effectiveness of addiction-prevention programmes with young people, drawing on 25 studies of programmes all but one of which had a school-based component and many of which were also community based (hence the inclusion of the results in this section). ‘Long-term’ is defined as covering at least two years from the start of the intervention, and the mean length is 69 months. **Results:** most of the studies (15 out of 25) report at least one positive effect on long-term smoking behaviour (in terms of lifelong, monthly, weekly or daily prevalence). The long-term reduction in smoking uptake was measured at 11.4 absolute percentage points difference between programme participants and the control group. Programmes which involved refresher sessions or spanned a period of at least two years were able to sustain long-term reduction rates of up to 57% at the last date of measurement. Immediately after the intervention, 18 of the 25 studies were able to demonstrate effects on smoking behaviour, and 13 of those showed long-term as well as initial effects. **Authors’ conclusion:** school-based projects are effective in the long term and are capable of preventing young people up to the age of 15 from starting to smoke. Positive effects in the short term are a useful pointer to positive long-term effects. The programmes studied are, however, very dissimilar and many methodological problems are still to be resolved.

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	UNIVERSAL Selective Undifferentiated	Family SCHOOL Leisure Media Community Legislation and regulations Undifferentiated	Tobacco ALCOHOL Cannabis Other illegal drugs Undifferentiated

Tobler *et al.* [6; 2000; M; 144 of more than 700 studies; 207 programmes; 1978–1997], studying interactive programmes and their effect on alcohol consumption, calculate on the basis of 66 values an → effect size of .13.

Ennett *et al.* [8; 1994; M; 8 of 18 studies; 1986–1994] report that, in relation to drinking behaviour, DARE has an → effect size indistinguishable from 0.

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	UNIVERSAL Selective Undifferentiated	Family SCHOOL Leisure Media Community Legislation and regulations Undifferentiated	Tobacco Alcohol CANNABIS Other illegal drugs Undifferentiated

Tobler *et al.* [6; 2000; M; 144 of more than 700 studies; 207 programmes; 1978–1997], with regard to interactive programmes and their effect on cannabis consumption, calculate, on the basis of 37 values, an → effect size of .13.

Ennett *et al.* [8; 1994; M; 8 of 18 studies; 1986–1994] report that the → effect size of DARE in relation to cannabis consumption is indistinguishable from 0.

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	UNIVERSAL Selective Undifferentiated	Family SCHOOL Leisure Media Community Legislation and regulations Undifferentiated	Tobacco Alcohol Cannabis OTHER ILLEGAL DRUGS Undifferentiated

Tobler *et al.* [6; 2000; M; 144 of more than 700 studies; 207 programmes; 1978–1997], with regard to interactive programmes and their effectiveness on the use of other illegal drugs, calculate, on the basis of nine values, an → effect size of .26.

Focus: children and pre-teenagers

In attempting to review the effectiveness of addiction prevention (with regard to illegal drugs) among schoolchildren under 11 years of age, **Lloyd *et al.* [15; 2000; U; 10 studies; number not supplied]** ran into problems due to the limited number of studies that addressed a range of methodological challenges (long-term data gathering about effectiveness, for example, and meaningful and realistic outcome variables for the measures concerned). **Results:** they report on studies of measures which, for the most part, target 9 to 11-year-old pupils and can potentially have a successful effect on influencing factors such as knowledge, attitude and social skills. **Author's conclusion:**

although no conclusions on effectiveness could be drawn, the authors use the available research to summarise principles that offer good prospects for success – namely early intervention, a focus on life skills, parental and community involvement, use of trained peers as mediators, intervention spanning the switch from primary to secondary schooling, interactive methods and a long-term, intensive approach that is group orientated (the selective target group can be reached while still at primary school).

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	UNIVERSAL Selective Undifferentiated	Family SCHOOL Leisure Media Community Legislation and regulations Undifferentiated	Tobacco ALCOHOL CANNABIS OTHER ILLEGAL DRUGS Undifferentiated

Focus: predictors of success

Gottfredson and Wilson [16; 2003; M; 94 studies; number not supplied] attempt to determine characteristics of effective school-based programmes with regard to target group, age or level of development and programme length and/or intensity. The types of intervention covered range from individual counselling and behaviour adjustment to development of the school context. **Authors' results and conclusion:** in relation to consumption of substances other than tobacco, the authors rated at .07 the → effectiveness of school-based prevention programmes with a universal target group. In terms of age or level of development, they reported lower effect sizes (.05 and .04 respectively) for primary-school children (up to age 11) and older schoolchildren (from age 15 upwards) than for pupils aged 12 to 15 (.09) – a finding that calls into question the prevailing principle of 'the sooner the better' with regard to long-term effectiveness. This was qualified by the observation that a degree of confusion could not be ruled out (confounding the effect of age with the effect of programme content), and that consequently no optimum age for addiction prevention could be deduced. The authors could not detect any difference in effect size according to programme duration (as opposed to intensity). As mediators, peers operating without teachers scored the highest effect size (.20); the ratings for peers operating with teachers and for programmes without peer mediation were only .04 und .05.

Focus: comparison with prevention in other fields

Wilson et al. [17; 2001; M; 165 studies; number not supplied] made a meta-analytical comparison of the effectiveness of school-based programmes designed to prevent various forms of problem behaviour, including the consumption of alcohol and illegal drugs. The degree of overlap with the studies used in the Gottfredson and

Wilson [16] → meta-analysis is unclear. The selected studies reflected various operationalisations of substance consumption. **Results:** by contrast with the → effect sizes of programmes designed to prevent pupils from dropping out of school or truanting (.16, 39 studies) or to address other types of problem behaviour (.17, 73 studies), the effect sizes with regard to prevention of delinquency and addiction were just .04 (40 studies) and .05 (80 studies) respectively. **Author's conclusion:** school-based prevention is effective in reducing consumption of alcohol and other drugs, as well as drop-out rates, truancy and other problems. The → effect size is, however, small. Greater levels of effect can be found in high-quality studies.

Focus: programme characteristics

Shin [18; 2001; S; 19 of 34 studies; 1993-1999] compiled the results of 19 studies including three evaluations of alcohol-related programmes and nine evaluations of general addiction-prevention programmes (→ general addiction prevention). The programmes involved pupils at all stages of schooling and comprised, for the most part, a combination of information giving, emotional education and social influence variables. **Results:** of the 19 studies, 14 reported positive effects and five reported no effects. No reliable links could be deduced between programme characteristics and effectiveness. **Author's conclusion:** the 'hybrid' model (combining information giving, emotional education and social influence variables) appears to be more effective than the social-influence approach alone. It can at least be concluded that the social-influence approach is not always effective, particularly with young people for whom the risk factors are not associated with peer-group pressure. It is also inappropriate that the programmes focus solely on individual factors, ignoring contextual factors.

Focus: long-term effectiveness

Skara and Sussman [14; 2003; S; 25 (→ CTs at least) from an unknown number of studies; 1966-2002] reported on the long-term effectiveness of addiction-prevention programmes with young people, drawing on 25 studies of programmes all but one of which had a school-based component and many of which were also community based. 'Long-term' is defined as covering at least two years from the start of the intervention, and the mean length is 69 months. Only nine of the 25 studies reported long-term effects in relation to alcohol or illegal drugs. **Results:** six of these nine studies demonstrated a positive effect. The long-term reduction in uptake as a result of participation in an addiction-prevention programme was measured at between 6.9% and 11.7% (absolute → percentage difference between the proportion of alcohol consumers among participants and in control groups); the corresponding difference for cannabis consumption was 5.7% (30-day prevalence). Programmes that included refresher sessions were more effective. Seven of the nine programmes which showed significant differences shortly after they ended also proved to have long-term effects. **Authors' conclusion:** school-based and community-based programmes are effective

over the long term in preventing uptake of alcohol and cannabis consumption. Positive effects in the short term are a useful pointer to positive long-term effects. The programmes studied are, however, very dissimilar and many methodological problems are still to be resolved.

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
Effectiveness KEY ELEMENTS	UNIVERSAL Selective Undifferentiated	Family SCHOOL Leisure Media Community Legislation and regulations Undifferentiated	Tobacco Alcohol Cannabis Other illegal drugs UNDIFFERENTIATED

Focus: information from studies of various types

Cuijpers [19; 2002; S; 3 → meta-analyses, 6 mediation studies, 21 comparative studies], after consulting meta-analyses, → mediation studies and comparative studies, formulated seven evidence-based quality criteria for school-centred prevention programmes. **Author's conclusion:** programme effects need to be proven and interactive methods should be used. The best theoretical base to date is the social-influence model. The focus should be on developing standards and on commitment to abstinence and intent to abstain; the addition of community components increases effectiveness. The use of peers as programme leaders is preferable, and additional life-skills training may further boost effectiveness. The only very strong evidence is for proven effectiveness; inclusion of life-skills is supported by only one type of study and the evidence here is the least strong. Evidence on the other five criteria was strong. None of the criteria can be regarded as conclusive. There is doubt about the additional effectiveness of refresher sessions, the importance of resilience-building skills and the assumption that more intensive programmes (with more sessions over a longer duration) are more effective than less intensive programmes.

Focus: → meta-analysis conclusions

Tobler [20; 2000; E; her own → meta-analysis; 6; 2000] draws on her own meta-analysis and her long and proven experience in addiction-prevention research to formulate conclusions about which components of addiction prevention work and which do not. **Author's conclusion:** with regard to content, the author draws conclusions about the transmission of information, the development of attitudes and resilience-building and intrapersonal skills. Information giving should cover the negative consequences of substance consumption in both the short term and the long

term; omitting reference to short-term consequences is not successful. Work on attitude development should involve school surveys about peer consumption; analysis of media influences and social influences conveying pro-consumption messages; and adjustment of what is generally an exaggerated perception of peer consumption. Omitting either perception of peer consumption or media analysis will fail to produce success; ethical/moral education and transmission of values are problematic. Resilience should be promoted through training in how to say 'no', and in self confidence, communication skills and safe behaviour (e.g. not drinking and driving). Omitting inter-personal skills and abstinence behaviour will jeopardise success. Intrapersonal skills, including coping strategies, dealing with stress, goal setting and skills in problem solving and decision making, should be promoted. An exclusive focus on intrapersonal factors or on the promotion of self esteem is unproductive. When implementing programmes, attention should be paid to the following factors: active commitment on all sides, involvement of peers, role-play generated by the pupils, supportive advice from peers, work on skills in saying 'no', sufficient time for exercises, peer models for desired behaviour, and activities appropriate to the pupils' stage of development to promote bonding among younger participants. On the other hand, passive participation, lectures, teacher-centred discussion, unstructured dialogue and, indeed, class development without a specific addiction-prevention component should be avoided.

Focus: peers as programme mediators

Mellanby *et al.* [21; 2000; S; 13 studies (all randomised); 1976–1996] assess the differing effectiveness of peer mediation and adult mediation in delivery of the same health-education and prevention programmes, including a large number of addiction-prevention programmes. **Results:** in six of seven studies which evaluated effects on knowledge and attitudes, peers were more successful. In seven of 11 studies which recorded behaviour, peers were more effective in influencing the relevant types of behaviour. **Authors' conclusion:** in direct comparison, peers would seem to be more effective, although methodological problems should not be overlooked. The authors recommend that knowledge should be transmitted by teachers and social skills by peers.

Focus: peers as programme mediators

Cuijpers [22; 2002; M; 12 studies, including 11 randomised studies; 1983–1993] conducted a meta-analysis which included the addiction-prevention studies used by **Mellanby *et al.* [21]** in their systematic → review. **Results:** comparison is relevant in only a few respects. Peers perform better than adults and teachers only in the short term (at post-treatment testing but not after one or two years) and never perform better than experts. **Author's conclusion:** the author concludes that involvement of peers may be more effective in the short term (possibly in particular circumstances). The

studies are, however, too varied and sub-optimal for this conclusion to be anything other than provisional.

4.2.4 School – conclusions

Substances: tobacco, alcohol, cannabis, illegal drugs

Geographical scope: only one unsystematic → review of research on a German-speaking sample group

Conclusiveness: levels A-C. Numerous → meta-analyses. High-quality studies record greater effects.

- **Interactive school-based programmes have → preventive effects on consumption behaviour (for tobacco, alcohol, cannabis and other illegal drugs). A^{6, 12}, B^{11, 14}, C^{9, 18, 47}, D¹⁰**
- **School-based programmes that implement the concepts of social influence and life skills are effective and equally effective for all substances. A₆**
- **Additional components of general relevance to the school as a field of intervention improve effectiveness. F (pro: A⁶, C⁴⁷; no assessment possible: B¹¹, C⁹)**
- **Non-interactive programmes are not effective: information-giving alone, A⁶, B¹¹; emotional education alone, A₆; transmission of values and decision-making alone, A₆; and DARE-type programmes, A^{6, 43}.**
- **Effects with regard to alcohol and tobacco are long term (2-3 years). A⁷, B^{14, 11}, D¹³**
- **Short-term effects are a good pointer to long-term effectiveness. B¹⁴**
- **School-based preventive programmes have less effect on consumption behaviour than they do on risk factors such as dropping out of school, truancy and other forms of problem behaviour. A¹⁷**
- **Smaller interactive programmes (with fewer participants) are more effective. A⁶**
- **Interactive programmes are effective for ethnic minorities. A⁶**
- **A substance-specific prevention focus is preferable in relation to tobacco but is not a determining factor in relation to alcohol. A⁶**
- **Inclusion of substance-specific content such as information about short-term and long-term negative consequences (D²⁰); standard setting on the basis of school surveys and media analyses (C¹⁹, D²⁰); and commitment to abstinence (C¹⁹) are all determining factors for effectiveness.**
- **Prevention programmes have the potential to induce young smokers to quit. D¹³**
- **Effects with regard to cannabis and other illegal drugs are long term (at least two years). F (long-term: B¹⁴; short-term: C⁴⁷)**
- **Programmes of moderate intensity and duration are more effective. F (pro: A^{6, 47, 12}; contra: A¹⁶, C¹⁹)**

- Involving peers as mediators increases the effectiveness of school-based programmes. F (pro: A^{12, 16}, B₂₁; contra: A^{6, 22})
- Interactive programmes are the most effective for younger pupils (up to and including age 11). F (positive: A₆; negative: A¹⁶)
- Programmes that include training in the ability to say ‘no’ are effective. F (pro: D₂₀; contra: C¹⁹)
- Programmes that include refresher sessions are more effective. F (pro: A^{47, 14}; contra: C¹⁹)

Quantitative indications:

Interactive programmes, based on two →meta-analyses, between .1 and .2 and up to .3 mean weighted →effect size

Long-term percentage differences between treatment group and →control group (all approaches, based on a systematic →review: treatment group 6-12% *absolute* less than the control group)

4.2.5. Leisure time and friends – results

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	UNIVERSAL Selective Undifferentiated	Family School LEISURE Media Community Legislation and regulations Undifferentiated	Tobacco Alcohol Cannabis Other illegal drugs UNDIFFERENTIATED

Focus: alternative approaches

Carmona and Stewart [23; 1996; U; 10 studies; 1983–1993] → reviewed the effectiveness of alternative approaches for the Centre for Substance Abuse Prevention (CSAP). They defined as ‘alternative’ activities, programmes and events at which alcohol, tobacco and drugs were excluded and in which participation was voluntary. These took many different forms and their components frequently included the transmission of knowledge and attitudes as well as skills training, use of free and otherwise unstructured time, pro-social activities, interaction with pro-social peers and development of positive relationships with adults or supervision by adults. The authors noted that there was a lack of rigorous evaluation. Despite the considerable popularity of the approach, they could identify only 10 individual studies with a methodology enabling them to be classed as relatively conclusive. **Author’s conclusion:** there is

little evidence for the effectiveness of these measures and little evidence indicating which approaches could be effective with which target groups. The authors therefore conclude from the individual studies: a) that the alternative approach appears to be the most effective with high-risk groups who lack adequate adult supervision and have little opportunity to structure their free time; b) that involving young people in the planning and implementation of these alternatives may increase levels of participation and effectiveness; c) that more intensive programmes are more effective; d) that skills training should be a component of such measures; and e) that alternatives as a component of a comprehensive project could serve to establish anti-consumption standards.

Focus: mentoring programmes

Aoki and Kollegen [24; 2000; U; 7 studies; 1990s] review seven studies of the effectiveness of mentoring programmes on performance at school and social behaviour as well as substance consumption. The mentoring programmes involve adults, other than parents, voluntarily spending free time with selected young people. **Authors' conclusion:** performance at school is generally improved and the transition from childhood to youth is eased. There are initial empirical indications of a reduction in substance consumption. At the same time, the authors warn against drawing hasty conclusions, as not enough research has been done.

4.2.6 Leisure time and friends – conclusions

Substances: no aggregate research results

Geographical scope: no reviews of research involving German-speaking sample groups

Conclusiveness: scarcely any research available

No conclusions

Quantitative indications: none

4.2.7 Media – results

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	UNIVERSAL Selective Undifferentiated	Family School Leisure MEDIA Community Legislation and regulations Undifferentiated	TOBACCO Alcohol Cannabis Other illegal drugs Undifferentiated

Focus: tobacco

Sowden and Arblaster [25; 2003; S; 6 studies (all → CTs) of a total of 65; 1983–1997], in a Cochrane Library → review, report on the effectiveness of mass-media interventions (TV and radio advertising based on the social-influence model) designed to prevent uptake of tobacco consumption. **Results:** in a comparison of mass media intervention against a control group, one of three studies demonstrated an effect on girls aged 14 to 18 (four → absolute percentage points less than in the → control group). There were no available studies comparing mass-media plus school-based intervention against a control group. One study considered the combination of mass-media plus school-based intervention versus mass-media intervention alone, but could not demonstrate any difference. Lastly, two studies tested the combination of mass-media plus school-based intervention versus school-based intervention alone, and one reported a significant effect for the additional mass-media components (→odds ratio .62). Some 60% to 80% of the target group was reached by each of the campaigns considered, and the advertisements were well prepared in all cases. **Authors' conclusion:** in summary, the most rigorously designed studies demonstrate that mass-media campaigns can effectively prevent the uptake of smoking, but the evidence is not strong.

Focus: a media campaign as a programme component

Hopkins et al. [26/35; 2001; S; 12 studies; 1980–2000], in one of a series of 'Reviews of evidence' for the Task Force on Community Preventive Services, report on 12 studies of mass-media campaigns (all but one in combination with other components) and their effects on consumption uptake. Mass-media campaigns are defined as involving the use of brief, recurring messages to inform tobacco-product users and motivate them to quit; message content is developed through formative research; and message dissemination includes the use of paid airtime and print space or donated time and space. **Results:** after two to five years, the five studies that measure self-declared consumption reported → absolute percentage differences between experimental and control groups of +.02 to –9.4 % (mean – 2.4%). Six studies reported

→ odds ratios as the indicator of effect. Two studies found no significant effect; four, which included follow-up two to four years on, reported similar → odds ratios of .49 to .74 (mean .60). One study reported 11 absolute percentage points fewer smokers in the intervention group after 15 years. **Authors' conclusion:** there is strong evidence for the effectiveness of a mass-media approach – when combined with other components – in reducing the prevalence of tobacco consumption among young people. The contribution of individual components cannot be identified in isolation.

Focus: general versus youth-orientated campaigns

Friend and Levy [27; 2002; S; number unknown; peer-reviewed studies and unpublished reports; 1983–2000] attempt to assess the reduction in smoking prevalence and volume that is achieved through mass-media campaigns, looking both at programmes for the population generally and at campaigns specifically targeting young people. **Results:** evaluations of comprehensive anti-tobacco programmes, including a mass-media campaign, aimed at the general population in two US federal states produced mixed results in relation to the youth population. Some studies reported no effect, others a rate of increase slower than the US-wide trend. The authors quote a report which found that expenditure of tax revenue on school programmes and mass-media campaigns was associated with a reduction in young people's tobacco consumption irrespective of the influence of other tobacco-control strategies. Youth-orientated campaigns in two other US states were associated with lower rates of smoking among young people (two and three → absolute percentage points, on 30-day prevalence, less than in the pre-campaign period). **Authors' conclusion:** federal programmes appear to be more successful than community programmes. Community programmes may work at all only if they are highly intensive or combined with other measures (e.g. in schools). The authors conclude that, in order to be successful, campaigns need to last longer and to be intensive; they need to arouse powerful emotions and should preferably not be humorous. They should also convey messages already proven to be successful, should avoid ambiguity and should use young spokespeople.

Focus: processes of influence

Wakefield et al. [28; 2003; U; 9 studies; 1986-2000], in their →review, discuss the media's role in the evolution of smoking behaviour, using nine studies on the influence of counter-advertising – i.e. advertising that aims to portray smoking in a negative light, as opposed to advertising for smoking, which seeks to associate smoking with positive things or feelings. **Authors' conclusion:** counter-advertising can have a positive effect on teenagers' smoking; that effect can be reinforced through parallel school-based programmes. Uptake prevention is a more likely outcome than cessation. Intervention in early youth would appear to more effective than later intervention, as younger sample groups appear to derive more benefit than their older counterparts. Gender and proximal social circumstances may be other moderators of success, influencing reception of the messages and the way they are discussed in the young people's environment. Findings are inconsistent with regard to the differential effectiveness of message content. Powerfully emotional images of the negative

consequences of smoking appear so far to be the most effective way of reaching young people. Exposure of the tobacco industry's machinations produces stronger cognitive commitment on the part of the target group. Appeals to young people to the effect that they must make a choice about smoking constitute the least effective type of message. There are also indications that the effectiveness of mass-media anti-smoking campaigns depends on the ratio of pro-smoking to anti-smoking advertising.

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	UNIVERSAL Selective Undifferentiated	Family School Leisure MEDIA Community Legislation and regulations Undifferentiated	Tobacco ALCOHOL Cannabis Other illegal drugs Undifferentiated

Focus: drink-impaired driving

According to **Agostinelli and Grube [29; 2002; U; number not supplied]**, the predominant type of counter-advertising in relation to alcohol is on the theme of drinking and driving. Results: the studies in question do not mention effects on consumption behaviour. Where there is an indication of the effectiveness of this type of advertising on the prevalence of drink-impaired driving and alcohol-related fatal accidents, it is unclear whether any reduction is the result of the advertisements themselves or of associated measures. The second most widespread form of counter-advertising in this field is the inclusion of warnings on drinks bottles and posters. Here too, there is process research which indicates that, although warnings are noticed and remembered, only a small number of studies have explored their effects on alcohol consumption. One long-term study on a sample of young people failed to detect any effects on behaviour. **Authors' conclusion:** the authors conclude that there is some evidence for the effectiveness of counter-advertising and warnings, although findings are mixed and dependent in most cases on the message, the medium and audience-related factors.

4.2.8 Media – conclusions

Substances: research relates predominantly to tobacco, with scarcely any focus on alcohol and none on illegal drugs

Geographical scope: no reviews of research with German-speaking sample groups

Conclusiveness: levels B to E; only three studies, researching isolated effects of media campaigns

- **Mass-media campaigns in combination with other components (school-based, community-based and national programmes) have → preventive effects on consumption behaviour (in relation to tobacco).** C^{27, 26}
- **Isolated mass-media campaigns do not reduce consumption (of tobacco).** C^{27, 26}
- **Youth-orientated media campaigns are more effective as part of national programmes than as part of community programmes (in relation to tobacco).** C²⁷
- Media campaigns tend to be more influential in preventing uptake of smoking than in promoting cessation of smoking and also tend to be more effective with young people at the lower end of the age band. D²⁸
- Factors that influence the success of mass-media campaigns are: gender, influences of social surroundings, campaign intensity and the relative intensities of pro-tobacco and counter-tobacco advertising. E²⁸
- Effective measures have the following characteristics: they deploy powerful emotional imagery (E^{28, 27}), they are not humorous (E²⁷), they make no ambiguous statements (E²⁷), they do not confront young people with the decision to consume or not (E²⁸), they uncover the machinations of the tobacco industry (E²⁸), and their messages are delivered by young spokespersons (in relation to tobacco) (E²⁷).
- Warnings on drinks bottles, as an isolated measure, have no effect on alcohol consumption. E²⁹
- TV advertisements to combat alcohol-impaired driving, in combination with supporting measures, have effects on the incidence of alcohol-impaired driving and on alcohol-related accidents. E²⁹

Quantitative indications

In combination with other components (one systematic → review): 0-10 → absolute percentage points fewer smokers than in the → control group

National programmes (one systematic → review): 2-3 → absolute percentage points fewer smokers than before the intervention

4.2.9 Community – results

‘Community’ is understood here to mean a geographical or political entity (e.g. a neighbourhood, municipality or region) that is smaller, closer to individuals and more amenable to influence by them than a national or federal political structure.

Community-level prevention measures take many different forms. Most of them entail a cross-system project with numerous components (involving school, family, media etc.), the components being evaluated on an individual basis. It is much more complex to evaluate a collaborative process involving networks of organisations and individuals in a community, who consider themselves committed to pursuing a specific aim.

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	UNIVERSAL Selective Undifferentiated	Family School Leisure Media COMMUNITY Legislation and regulations Undifferentiated	Tobacco Alcohol Cannabis Other illegal drugs UNDIFFERENTIATED

Focus: collaborative interventions

Stevenson and Mitchell [30; 2003; U; 3 studies (→ RCTs), 1 review; 1995–2000] survey the role in addiction prevention of community-wide collaborative approaches and how their strategies affect substance consumption. Reviewing the effectiveness of such approaches – designed to trigger an extended process that works through a range of systems, involving community, school or family as well as individuals – clearly presents many methodological challenges. The authors noted that the necessary theoretical basis (or intervention model) was lacking in most of the projects. Collaborative interventions are understood as networks linking a large number of relevant organisations and individuals in a community who consider themselves committed to a particular aim. The authors identify three types of collaborative strategy for influencing substance consumption in communities: building community capacity, increasing service integration, and influencing policy change. **Results:** two quasi-experimental studies looked at community capacity building and its effects on consumption behaviour. One of these studies identified robust effects by comparison with the control community although it was difficult to relate them to individual elements of what was a wide-ranging project. The other studies produced positive results for more direct indicators of success (notably a close network of organisations linked both vertically and horizontally) but there were so far no indicators of success in relation to consumption variables. On the second strategy – service integration – only one study of resulting improvements in health provision is quoted (the sample here involved children of military personnel and mental health services). It reported no effects in relation to the ultimate aim – the children’s mental health – and there is some

debate concerning the time period over which the study was carried out. The third strategy is that of influencing policy change: in terms of collaboration this involves mobilising a community (the population and politicians etc.) with a view to implementing an evidence-based process. Pentz (see Legal framework [34]) has gathered evidence on the effectiveness of this strategy. **Authors' conclusion:** in line with the findings of other reviews, the authors were unable to identify any strong effects of collaborative intervention on a wide range of health-related behaviour patterns. While none of the researchers reviewed recommended abandoning the collaborative approach, many methodological shortcomings in the evaluations were noted, including a failure to specify patterns of cause and effect that might provide a basis from which to identify mediating indicators of success. This is an approach to prevention that is still in development and it is therefore too soon to draw conclusions about its effectiveness.

Focus: cross-system projects

In their → meta-analysis of school-based addiction-prevention programmes, **Tobler and Kollegen [6; 2000; M; 144 of more than 700 studies; 207 programmes; 1978-1997]** found nine studies of system-wide approaches, three of them of high quality. By definition, system-wide approaches either address the school system (as two of the projects studied did) or constitute multi-component cross-system projects (seven projects fell into this category). **Results:** the average effect size from all available studies of system-wide prevention projects was statistically significant at .27. From the high-quality studies only – including one school-system-based project and two cross-system projects – the reported → effect size was .22. **Conclusion, according to Tobler [20]:** too few studies have been carried out to enable a comparative assessment of this approach. The meta-analysis represents the first test of system-wide programmes. On the basis of its findings, the expected effect size with a sample group of 1 000 young people would be .30. System-wide approaches are rapidly gaining ground in the field of prevention. Given the ‘myriads’ of influences to which young people are exposed, it cannot be assumed that one-off measures will have a significant effect in the long term, without parallel changes at community and family level.

Focus: cross-system projects with family-based components

Loveland-Cherry [2; 2000; S; 13 of 92 studies; 1990-1999] researched three community-based multi-component projects that included family-orientated components. **Results:** community-projects (three → RCTs) produced effects within one year, including delaying the uptake of alcohol and other drug consumption among young people or reducing existing levels of consumption. One study assessed long-term effects (over three years) and reported reductions in the consumption of tobacco and cannabis but not of alcohol. **Author's conclusion:** the interventions and studies are impressive with regard to a number of target variables: application of theory-based strategies, soundness of research design, range of sample populations, and proven effects. The studies tended to indicate short-term effectiveness, with fewer long-term results. There was further support for the idea that it is more effective to intervene with groups at risk.

Focus: cross-system projects in various fields of prevention

Wandersman and Florin [31; 2003; BP; 6 studies on substance consumption (3 → RCTs, 1 → CT); 1989–2000] report on examples of many promising cross-system projects – focusing on problems ranging from addiction through teenage pregnancy to immunisation and arson – which have received impetus either from research or from community sources. **Authors' conclusion:** the research highlighted many individual examples of cross-system projects that affect physical or mental health across the population spectrum. → Reviews and comparative studies showed, however, that in many cases expected results were not achieved.

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	UNIVERSAL Selective Undifferentiated	Family School Leisure Media COMMUNITY Legislation and regulations Undifferentiated	TOBACCO Alcohol Cannabis Other illegal drugs Undifferentiated

Focus: cross-system projects in relation to tobacco

Sowden et al. [32; 2004; S; 17 of 63 studies, 6 → RCTs and 11 → CTs, 18 comparisons] reported for the Cochrane Library on the effectiveness of cross-system projects designed to prevent the uptake of smoking. **Results:** in two of 13 comparisons with control groups the prevalence of smoking in the sample population was reduced. The two projects in question were concerned with prevention of circulatory diseases. Effects were also observed respectively five and fifteen years later (10 → absolute percentage points fewer smokers than in the control community and a 22% reduction in prevalence lifelong [whether in → absolute or → relative percentage points is unclear] against the control community). Of the three comparative studies that compared cross-system programmes with school-based programmes in isolation, one established a difference. In a comparison between a multi-component project and a stand-alone mass-media campaign, the proportion of smokers in the group exposed to the more comprehensive approach was lower. One study indicated that a community-based project without a school-based programme was less effective than a project which included such a programme. **Authors' conclusion:** there is a slim body of evidence to indicate that the effectiveness of coordinated multi-component community programmes can reduce rates of smoking among young people.

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	UNIVERSAL Selective Undifferentiated	Family School Leisure Media COMMUNITY Legislation and regulations Undifferentiated	Tobacco ALCOHOL Cannabis Other illegal drugs Undifferentiated

Focus: cross-system projects in relation to alcohol

Foxcroft *et al.* [33; 2003; S; 3 studies (2 → CTs); 1996–2000], in a Cochrane Collaboration → review, consider chiefly psychosocial interventions, including three cross-system community projects. **Results:** one project targeting the population generally (rather than just young people) recorded a 10% year-on-year reduction in road accidents and an 18% reduction in alcohol sales to underage teenagers, by comparison with the control community. The extent to which these results also reflect, respectively, young drivers' behaviour and young people's consumption of alcohol, is unknown. Another community project showed no effects at an evaluation three years after its implementation. The only indicator to show a very slight reduction was the number of arrests of 18 to 20-year-olds for alcohol-impaired driving. In the third project, although consumption behaviour was initially affected in the course of the intervention, no effects could be measured four years later. **Authors' conclusion:** a community approach may well be more cost effective than a range of programmes for different types of group, but many questions (about effects on consumption, cost-benefit analyses and effectiveness of intensive implementation) remain to be answered.

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
Effectiveness KEY ELEMENTS	UNIVERSAL Selective Undifferentiated	Family School Leisure Media COMMUNITY Legislation and regulations Undifferentiated	Tobacco Alcohol Cannabis Other illegal drugs UNDIFFERENTIATED

Focus: collaborative initiatives

Stevenson and Mitchell [30; 2003; U; 7 studies; 1990-1995] compile findings from cases studies about key factors for successful collaboration. These include exceptional investment of time, energy and money; a supportive social context at the outset (with both financial and political backing); careful development of an initial structure; a formalised structure and task-centred working groups; action to anticipate changes of membership and leadership; strategies for coping with conflict and competition;

involvement of minorities; prior checking of community readiness to participate; inclusion of feedback processes.

4.2.10 Community – conclusions

Cross-system projects

Substances: conclusions in relation to tobacco, alcohol and cannabis/other illegal drugs

Geographical scope: no reviews of research with German-speaking sample groups

Conclusiveness: levels A to D. There are few studies but their quality is high.

- Cross-system projects have → preventive effects on consumption behaviour. F (pro: A⁶; inconclusive: B³², C^{33, 2}, D³¹)

Substances: undifferentiated

Geographical scope: no reviews of research with German-speaking sample groups

Conclusiveness: level D. Serious methodological shortcomings (a lack of theoretical support for projects and a shortage of studies) make it impossible to draw conclusions.

Collaborative initiatives

- Collaborative initiatives aimed at getting laws or regulations introduced are effective when the laws and regulations work. D^{30, 34} (See Legal framework – conclusions.)
- There are a number of principles for constructing a collaborative initiative in a potentially effective way. D³⁰

Quantitative indications

Cross-system projects: two individual studies recorded 10-20 → absolute percentage points fewer smokers than in the → control group, → Effect size from a → meta-analysis based on nine projects: .27 (not differentiated by substance)

Collaborations: none

4.2.11 Legal framework – results

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	UNIVERSAL Selective Undifferentiated	Family School Leisure Media Community LEGISLATION AND REGULATIONS Undifferentiated	Tobacco Alcohol Cannabis Other illegal drugs UNDIFFERENTIATED

Focus: community level

Pentz [34; 2000; U; 9 studies including→ reviews; 1989–1998], a recognised expert in the field, considers individual studies and reviews of community policy to identify those where effectiveness was proven. She also explores how a community can be mobilised to change the course of policy-making and the role played by politics in sustaining or institutionalising community-based prevention measures. She draws a distinction between two types of measure at community level: those involving implementation and those related to applicable regulations. To date, both approaches have focused on tobacco and alcohol. **Author's results/conclusions:** regulatory measures appear to have the most direct effects on smoking and drinking behaviour, producing reductions of 5% to 40% (increased rates of duty led to a 5-10% reduction in consumption; reducing availability cut purchases by 5%; reducing access cut sales by 5-40%; enforcing observance of existing laws produced reductions of 5-8% in consumption, sales and alcohol-impaired driving). Systematic policy changes aim to influence young people's substance consumption directly by institutionalising prevention projects. The author found that changes of this type had the greatest potential for influencing consumption behaviour in the long term (financing youth programmes reduced consumption by 5-40%; implementation efforts and/or quality assurance measures produced reductions of between 2.5% and 20%; support for the sustainable extension of prevention campaigns brought about a 2-5% reduction; while the percentage change resulting from structural or financial support for the administration of community-based prevention efforts was unknown). (It is unclear whether the reductions represent → absolute or relative percentage differences by comparison with a → control group or whether the comparison is with previous prevalence.)

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	UNIVERSAL Selective Undifferentiated	Family School Leisure Media Community LEGISLATION AND REGULATIONS Undifferentiated	TOBACCO Alcohol Cannabis Other illegal drugs Undifferentiated

Focus: increasing the price of tobacco

Hopkins et al. [26/35; 2001; S; 8 studies; 1980–2000], in a review for the Task Force on Community Preventive Services, report on economic studies that consider the effects of tobacco price increases on consumption uptake. Prices or price changes are correlated with the results of surveys on prevalence. **Results:** seven of the eight studies considered report significant effects. The median reported → price elasticity (change in consumption with a 1% increase in price) is $-.37$ in terms of prevalence and $-.23$ for

volume consumed; in other words, a 10% price increase could be expected to reduce the number of smokers by 3.7% and the number of cigarettes smoked by 2.3%. **Authors' conclusion:** there is strong evidence for the effectiveness of higher tobacco prices in reducing the prevalence of tobacco consumption among teenagers and young adults.

Focus: sale of tobacco to young people under age

Stead and Lancaster [36; 2004; S; 30 studies; 1983-1998] reviewed 11 controlled studies of measures to reduce illegal sales of tobacco to young people. **Results:** six studies reported a significant reduction in illegal sales following an intervention. Three of the interventions in question involved regular monitoring of the way that legislation was applied; the others did not include monitoring, providing instead for either the issue of additional warning letters or the inclusion of supplementary community components. Three of seven studies which considered the effect of interventions on perceptions of availability (i.e. of how easy it is to buy cigarettes) reported a desired effect. The extent to which the measures really influenced young people's smoking behaviour was explored in five controlled studies, three of which found a significant reduction, although the base data is inconsistent (only individual variables influenced, only younger teenagers influenced and only short-term effects). The authors therefore advise that the positive results of these uncontrolled studies should be treated with caution. **Authors' conclusion:** simply informing retailers is not sufficient as a means of preventing the sale of cigarettes to young people under age. Training sessions can improve effectiveness but it is important to monitor observance of the rules regularly and over the long term. The authors recommend a step-by-step approach (warnings and fines followed by withdrawal of sales licence). They conclude that, although intervention can reduce the volume of illegal sales, young people can still manage to buy cigarettes.

Focus: sale of tobacco to young people under age

Fichtenberg and Glantz [37; 2002; S; 8 studies; 1991-2002] combine the results of eight studies (one cohort-based and seven multiple cross-section studies) which consider the link between observance of age restrictions on the sale of cigarettes to young people (merchant compliance) and teenagers' smoking behaviour (30-day prevalence and regular smoking). **Results:** the studies yielded values from 38 communities. The cross-sectional correlations, at $r=.116$ and $r=.017$, were not significant. There were no indications of a threshold effect. Nor was an improvement in merchant compliance following intervention (evident from a before-and-after comparison) reflected in the teenagers' smoking behaviour. The types of intervention aimed at producing improvement ranged from enforcement of existing laws and merchant training to withdrawal of licences. Their effect was estimated at approximately -1.5% , a value not significantly different from 0. **Authors' conclusion:** given the limited resources available for tobacco control, as well as the expense of conducting youth access programmes, this strategy should be abandoned and the limited resources available for tobacco control should be devoted to other types of intervention with proven effectiveness (i.e. increasing rates of duty, making

workplaces and homes smoke free, media campaigns and education about the consequences of passive smoking).

Focus: national tobacco control programmes

Wakefield and Chaloupka [38; 2000; S; 16 studies, 5 programmes; 1989–1999] reported on 16 studies that explored the effectiveness of national tobacco-control programmes in US federal states. These comprehensive projects include a mixture of elements: an education campaign using posters and electronic and print media, development and implementation of legal age restrictions for consumption and purchase, restrictions on advertising, creation of smoke-free environments, community initiatives, funding for local organisations running workplace training programmes, training and support measures for cessation of smoking in the health-care system, school-based programmes focusing on curriculum development, school policies and prevention, direct help for smokers wanting to quit (a hotline and relevant materials), as well as research and evaluation. It is a characteristic of the programmes that they set out to tackle smoking behaviour in the population generally by means of strategies to change the social environment in which people smoke and give up smoking. The indicator of success is the implementation of measures (including both legislation and programmes) that have proven their effectiveness in reducing smoking among young people. **Results:** the authors report four consistent findings from the studies. (1) More fully funded programmes tend to be more successful in implementing important aspects of tobacco control (via the media, communities, schools, local legislation and access restrictions) and they thus create an environment that encourages non-smoking. (2) Price increases affect young people's smoking, but greater reductions can be expected from programmes that also involve additional activities. (3) National programmes reduce smoking among adults. (4) With regard to young people as a target group, there is persuasive evidence that such programmes produce change in risk factors. **Authors' conclusion:** there is compelling evidence that programmes have an effect on factors which influence teenagers' smoking. On the basis of these studies and other research findings, the authors conclude that comprehensive tobacco-control programmes constitute an effective strategy for reducing smoking among young people.

Focus: banning tobacco advertising

In a report on the links between advertising and tobacco consumption, **Hanewinkel and Pohl [39; 1998; ES]** consider the impact of advertising bans on the prevalence of tobacco consumption by young people and compare epidemiological trend analyses from countries that have a long-standing ban (e.g. Norway and Finland), countries where a ban has been introduced only recently (including New Zealand and France) and countries with a minimal ban (e.g. Germany). The conclusiveness of the findings is considerably limited by methodological problems. **Results:** reductions in prevalence are more marked in countries with a long-established ban on tobacco advertising than in those where a ban was introduced only recently or where no comprehensive ban is in force. **Authors' conclusions:** advertising bans have been worthwhile in the long term in those countries with policies for implementing them properly.

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	UNIVERSAL Selective Undifferentiated	Family School Leisure Media Community LEGISLATION AND REGULATIONS Undifferentiated	Tobacco ALCOHOL Cannabis Other illegal drugs Undifferentiated

Focus: minimum age for alcohol consumption

Shults et al. [40; 2001; S; 33 studies on age limits, 6 studies on blood/alcohol limits; 1980–2000], reporting for the Task Force on Community Preventive Services, assess the effectiveness of laying down a minimum age for alcohol consumption (Minimum Legal Drinking Age Laws, MLDA) and blood/alcohol limits for young and inexperienced drivers as a means of preventing alcohol-impaired driving. **Results:** the 33 studies considered show that raising the minimum legal age for alcohol consumption reduces the number of accidents, including fatal accidents (median 15%), whereas lowering it produces an increase in the accident rate (median 8%). Raising the minimum legal age by three years (from 18 to 21) can be expected to result in 12% fewer fatal accidents involving young adults. Six studies also indicate that lowering blood/alcohol limits (to 0.02g/dL) is an effective means of reducing the rate of alcohol-related accidents involving young drivers. The extent of the reduction, measured against a period of time before implementation of the measure, varies according to the studies between 24 and 4 → absolute percentage points. **Authors' conclusion:** there is strong evidence for the effectiveness of higher age limits and adequate evidence for the effectiveness of lower blood/alcohol limits for young and inexperienced drivers.

Focus: minimum age for alcohol consumption

Wagenaar and Toomey [41; 2002; S; 48 studies; 1960–1999] analysed the effectiveness of a minimum legal drinking age on alcohol consumption and alcohol-related problems among under-21-year-olds in colleges and elsewhere. **Results:** the 48 studies yielded 78 findings. The main indicators used were self-reported consumption levels and purchase figures. A significant desired correlation between a higher minimum age and a lower consumption volume was established in 27 of the 78 cases (35%); a significant undesired correlation (a higher minimum age associated with increased consumption) was recorded in only five cases. The findings from a selection of high-quality studies were similar (from longitudinal studies 33%; from comparative group studies 42%; from representative samples 34%). Of all the studies that produced significant findings, 87% reported a desired correlation and 13% an undesired correlation. Of 79 high-quality studies on the relationship between age limits and traffic accidents, 46 (58%) established a significant inverse correlation. With regard to other health and social problems (vandalism, violence, work-related problems, suicide

and deaths) eight out of 23 high-quality studies (35%) reported desired effects. However, three studies that analysed symptoms of an alcohol-related disorder established no significant correlation. **Authors' conclusion:** most of the evidence suggests that raising the minimum legal drinking age can reduce alcohol consumption. The authors consider that, by comparison with other options, raising the minimum age to 21 represents the most successful means so far of reducing young people's alcohol consumption. Given that the measure would apply across the entire population and that efforts to enforce existing laws have so far been limited, what is apparently a small effect could potentially produce considerable benefit to society. While a minimum drinking age of 21 will certainly not stop teenagers drinking alcohol, it is an important component of a multi-faceted approach to youth alcohol problems.

Focus: increasing the price of alcohol

Chaloupka et al. [42; 2002; U; 6 studies, 1987–2001] review a number of studies analysing the effect of price rises on alcohol consumption and its negative consequences. **Results:** long-term → price elasticity (change in consumption for a 1% price increase some years previously) is greater than short-term price elasticity, lying between $-.65$ and $-.29$; in other words, a 10% price increase will have the long-term effect of reducing consumption by between 6.5% and 3%. Previous studies have also shown that increasing the total price of alcohol (i.e. the monetary price plus indirect costs related to illegality, including procurement problems and falsification of ID papers etc.) is an effective means of reducing alcohol-induced violence and crime among young adults. **Authors' conclusion:** increasing the price of alcohol appears to be an effective means of reducing its consumption and associated negative consequences. This applies in relation to teenagers and young people, for whom the 'total price' is the key consideration. Among teenagers, alcohol price increases not only have the effect of moderating consumption but also, and more significantly, influence the pattern of frequent heavy drinking. The conclusions are subject to the qualification that, due to a shortage of experimental studies, it is not clear whether the effects result from price increases or from other factors (for example, age limits). Attempts to control for such factors have so far produced inconsistent results.

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	UNIVERSAL Selective Undifferentiated	Family School Leisure Media Community LEGISLATION AND REGULATIONS Undifferentiated	Tobacco Alcohol CANNABIS Other illegal drugs Undifferentiated

Focus: decriminalisation of cannabis

From a prevention point of view, deterrence is the presumed benefit to be derived from the criminalisation of cannabis possession and consumption. Epidemiological studies show that consumption is growing over the years despite its illegality. It is impossible to determine whether the growth rate would be higher if possession and consumption were legal. Apart from cutting the costs associated with implementation of the existing laws, decriminalisation would eliminate the negative individual consequences caused by the fact of personal cannabis consumption being an offence. **Single *et al.* [43; 2000; S; 11 studies; 1990s]** report on the effects of decriminalisation measures in two countries (the USA and Australia) and compare them. **Results:** the first point made is that the measures are less radical than they sound. Possession continues to be an offence although in most cases a fine is imposed without any prosecution. No effects on cannabis consumption (in terms of lifetime prevalence) are observed as a result of decriminalisation. In Australia and in the USA, consumption rose at a similar rate both in states that had decriminalised and in those that had not. In Australia several national studies were commissioned. In the USA only relatively small-scale studies are available. At the same time, there is potential for saving money by not prosecuting and in terms of other social costs. **Authors' conclusion:** decriminalising cannabis leads to cost reduction without increasing consumption or triggering cannabis-related problems. However, legalising cannabis or decriminalising other illegal drugs would not necessarily produce similar results.

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
Effectiveness KEY ELEMENTS	UNIVERSAL Selective Undifferentiated	Family School Leisure Media Community LEGISLATION AND REGULATIONS Undifferentiated	Tobacco Alcohol Cannabis Other illegal drugs UNDIFFERENTIATED

Focus: influencing policy

Pentz [34; 2000; U; 9 studies including → reviews; 1989–1998] reports on factors that are important in implementing and sustaining prevention efforts at policy-making level: involvement of external advisors in decision-making, in conjunction with politicians; networking with other political leaders and organisations; a propitious organisational climate; sustained participation by political leaders; and the tailoring of prevention efforts to communities' cultural contexts. The authors see all these factors as potentially contributing to political leaders' awareness of their own effectiveness in steering policy decisions in the right direction and sustaining prevention efforts. In order for policy decisions to be effective, prevention efforts must be supported and must be subject to accepted standards. In relation to regulatory provisions, it is

important to have the support of the executive, administrators, the retail trade and the community generally. Programmatic provisions will be accepted only with the support of the relevant administration and those responsible for implementation. Case studies of community-based prevention projects also point to key factors in the transfer of evidence-based prevention into practice, namely the establishment of local champions, i.e. people or groups who invest time and resources in a public commitment to prevention; the provision of local resources for a sustained prevention effort; feedback on preventive effects; and support from the mass media.

4.2.12 Legal framework - conclusions

Substances: tobacco, alcohol, cannabis

Geographical scope: no reviews of research using German-speaking sample groups

Conclusiveness: levels B to E, no → RCTs

- Higher tobacco prices reduce the prevalence and quantity of tobacco consumption. C³⁵
- Isolated measures to prevent the sale of tobacco to young people under the legal age do not reduce consumption. C^{36, 37}
- National programmes are effective in changing risk factors and protection factors for smoking, but not in changing consumption behaviour. C³⁸
- Raising the minimum legal drinking age reduces alcohol consumption. B⁴¹
- Raising the minimum legal drinking age reduces the negative consequences of alcohol consumption (alcohol-related accidents B⁴¹, C⁴⁰; other health and social problems B⁴¹).
- Lower blood/alcohol limits for young and/or inexperienced drivers have a positive effect on alcohol-related accidents. C⁴⁰
- Decriminalising cannabis does not increase its consumption and produces a reduction in social costs. C⁴³
- A comprehensive long-term ban on the advertising of tobacco products has preventive effects on consumption behaviour. E³⁹
- Higher 'total alcohol prices' (inclusive of indirect costs) have effects on alcohol consumption and alcohol-induced deviance. D⁴²
- Higher 'total alcohol prices' (inclusive of indirect costs) reduce consumption by both moderate and heavy drinkers. D⁴²
- Programmatic legislative provisions at community level (in relation to programme financing, implementation measures/quality assurance, conditions for running programmes etc.) have an indirect long-term effect on consumption (of tobacco and alcohol). D³⁴
- Regulatory provisions at community level (in relation to rates of duty and to compliance monitoring) have a direct, short-term effect on consumption (of tobacco and alcohol). E³⁴

Quantitative indications:

Programmatic provisions: 2-40% reduction in consumption (unclear whether percentage difference is absolute or relative)

Regulatory provisions: 5-10% reduction in consumption (unclear whether percentage difference is absolute or relative)

Price elasticity for tobacco (→ price elasticity): 10% price increase results in 3.7% fewer smokers and a 2.3% decline in consumption volume

Price elasticity for alcohol: 10% price increase results in a 3% to 6.5% decline in alcohol consumption

4.3 Effectiveness of prevention – across different fields of intervention

4.3.1 Prevention with groups at risk – results

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS KEY ELEMENTS	UNIVERSAL SELECTIVE Undifferentiated	Family School Leisure Media Community LEGISLATION AND REGULATIONS UNDIFFERENTIATED	Tobacco Alcohol Cannabis Other illegal drugs UNDIFFERENTIATED

Focus: general effectiveness

Wicki and Stübi [44; 2001; S; 12 studies; 1994–1998] reported on 12 intervention studies involving high-risk groups (children of addicts or of single parents, abused or neglected children, children with problems at school, children with disabilities, children with emotional problems, people in economically disadvantaged neighbourhoods with moderate alcohol consumption, pregnant girls and women). Most of the programmes were based in schools with a few in universities, church communities or neighbourhoods experiencing social tension. The main focuses were on social-skills training and efforts to improve attachment to families and school or parenting. Isolated programmes sought to promote stress management, resilience, school performance, personal effectiveness and self esteem, or addressed consumption-specific intentions. Two mentoring programmes involved teenagers' receiving support from adults and positive role-modelling and social support. **Results:** with regard to effectiveness, the authors found in summary that five of the 12 studies reported a decline in substance consumption, four reported that target resource variables had been positively affected and three reported an increase in substance consumption. No distinguishing characteristics for effective interventions emerged, although it was noted that the two mentoring programmes were among the successful approaches. Possible explanations for the undesired increases in substance consumption reported were the particular nature of a sample group (pregnant teenagers), the fact that stigmatisation may have played a role, and implementation shortcomings. **Authors' conclusion:** the authors report a picture which gives cause for concern, with mixed findings and no basis for generalised observations. They also lament the fact that long-term studies are rare. The only promising finding highlighted is the success of mentoring programmes.

Focus: general effectiveness

Catalano et al. [45; 1998; BP; 13 programmes; 1980s] present studies on 13 selected and effective prevention programmes involving high-risk groups (children of addicts and children with severe problems at school or exhibiting anti-social behaviour at an early age). **Results/authors' conclusion:** the four programmes for children of addicts were either family orientated or involved training in stress management or general childcare skills. The authors report methodological shortcomings in evaluations conducted to date. There was no information on children's consumption behaviour. The programmes nonetheless give grounds for optimism inasmuch as they impacted on factors influencing consumption. The (nine) prevention programmes for children with marked behavioural traits were designed to focus on individuals or the family or else were cross-system initiatives. The authors regarded these programmes as the most hopeful because the evidence for their effectiveness (on aggression, delinquency and other types of problem behaviour) was much stronger and their methodological shortcomings were less serious than those observed in the programmes for children of addicts. In addition, both universal and selective programmes (four in number) to address severe problems at school gave grounds for optimism with regard to addiction prevention among under-achievers at school. The programmes produced effects on the children's school performance and on other school-related variables. Generally

speaking, addiction-prevention efforts among children at high risk – whether universal or selective in their approach – are very promising. Nonetheless the authors note that effects on substance consumption have not been monitored although there is a sound theoretical case for such monitoring on the basis of the risk-factors and protection-factors model.

Mowbray and Oyserman [46; 2003; BP; 8 programmes] highlight eight programmes for the prevention of addiction among children of mentally ill parents. **Authors' conclusion:** the studies have shown that, through the programmes, the children concerned can learn social skills which they might not have acquired at home. They have also shown that efforts to promote parenting are effective in terms of addiction prevention. Given the importance here of family-related risk factors, the authors suggest that a family-orientated approach be adopted.

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	UNIVERSAL SELECTIVE Undifferentiated	Family SCHOOL Leisure Media Community Legislation and regulations Undifferentiated	Tobacco ALCOHOL CANNABIS OTHER ILLEGAL DRUGS Undifferentiated

Focus: school-based measures

Gottfredson and Wilson [16; 2003; M; 94; number not supplied], looking at school-based prevention programmes with selective target groups, calculated an → effect size of .05 (by comparison with .07 for universal approaches). Cognitive and behavioural programmes had a greater effect size with high-risk groups than with a universal sample group (.20 versus .05), although the number of studies (five) involving high-risk groups is small. **Authors' conclusion:** it is not possible to conclude which groups should be the target of preventive measures. All that can be asserted is that selective social-skills programmes are more effective than universal programmes.

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	Universal SELECTIVE Undifferentiated	Family School LEISURE Media Community Legislation and regulations Undifferentiated	Tobacco Alcohol Cannabis Other illegal drugs UNDIFFERENTIATED

Focus: mentoring programmes

Aoki and Kollegen [24; 2000; U; 7 studies; 1990s] report on seven studies that explore the effectiveness of mentoring programmes on performance at school and social behaviour as well as substance consumption. The mentoring programmes involve adults other than parents voluntarily spending time with selected young people. **Authors' conclusion:** in most cases school performance is improved and the transition to teenhood is eased. There are initial empirical indications of a reduction in substance consumption. At the same time, the authors caution against drawing hasty conclusions as too little relevant research has been carried out to date.

4.3.2 Prevention with groups at risk – conclusions

Substances: undifferentiated

Geographical scope: no research with German-speaking sample groups

Conclusiveness: levels A to D

- **Selective addiction-prevention measures have preventive effects on consumption behaviour if they are implemented in the form of school-based social-skills programmes or mentoring programmes. A¹⁶, B⁴⁴, D^{45, 46}**
- **There is a risk with selective addiction-prevention measures of consumption behaviour being influenced in a non-preventive direction. B⁴⁴**

Quantitative indications: none

4.3.3 Negative effects – results

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	UNIVERSAL Selective Undifferentiated	Family School Leisure Media Community Legislation and regulations UNDIFFERENTIATED	Tobacco Alcohol Cannabis Other illegal drugs UNDIFFERENTIATED

Focus: universal prevention

Werch and Owen [48; 2002; S; 17 studies selected from 152 articles and 48 reviews (9 → RCTs, 9 → CTs); 1980–2001] researched undesired effects of addiction-prevention programmes, 76% of which were based in schools. Half of the 17 studies they selected were concerned with prevention of alcohol abuse and → general

addiction prevention; no publications were found about negative effects of programmes specifically directed at smoking prevention. **Results:** most of the negative effects concerned alcohol consumption (17 out of 19 negative outcomes), with smoking in second place (five out of 19) followed by drugs (three out of 19), cannabis, inhalants and painkillers. The general programmes resulted in a more marked increase in consumption of alcohol, tobacco and cannabis and in multiple substance consumption than was produced by the alcohol-specific programmes (nine general addiction-prevention programmes reported 21 negative outcomes, while eight programmes for prevention of alcohol abuse reported eight negative outcomes). **Authors' conclusion:** the authors conclude that, given the abundance of addiction-prevention programmes, there are very few published studies reporting negative effects. That is, however, no indication of the real incidence of such effects. It could be that the multiplicity of messages delivered by general addiction-prevention programmes leads to diminished perception of the risks associated with various substances. Negative effects occur most commonly in the context of mixed (positive and negative) results, suggesting the presence of programme defects rather than a failure of delivery. It would seem that mistakes have been made in prevention programmes for sub-groups (such as experienced substance users or young people with flawed normative expectations), where iatrogenic effects (negative effects caused by the intervention) have been observed. The second most common context for negative outcomes is where other effects have not been significant. This scenario suggests failure at theory level, in programme implementation or in programme development. A typical example of theory-to-practice failure is to be found in the DARE programme, where a sound theoretical basis has not been reflected in appropriate implementation. The authors note that, very occasionally, negative outcomes occur in the context of generally positive findings. These cases are assumed to reflect methodological constructs or simply accidents.

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	Universal SELECTIVE Undifferentiated	Family School Leisure Media Community Legislation and regulations UNDIFFERENTIATED	Tobacco Alcohol Cannabis Other illegal drugs UNDIFFERENTIATED

Focus: selective prevention

Wicki and Stübi [44; 2001; S; 12 studies; 1994–1998] reported on 12 studies of intervention with groups at high risk. Most of the programmes were based in schools with a few in universities, church communities or neighbourhoods experiencing social

tension. The main focuses were on social-skills training and efforts to improve attachment to families and school or parenting. Isolated programmes sought to promote stress management, resilience, school performance, personal effectiveness and self esteem, or addressed consumption-specific intentions. Two mentoring programmes involved teenagers' receiving support from adults and positive role-modelling and social support. **Results:** three of the 12 studies reported an increase in substance consumption. Possible explanations for the undesired increases in substance consumption reported were the particular nature of a sample group (pregnant teenagers), the fact that stigmatisation may have played a role, and implementation shortcomings. **Authors' conclusion:** the authors report a picture which gives cause for concern, with mixed findings and no basis for generalised observations.

4.3.4 Negative effects – conclusions

Substances: undifferentiated

Geographical scope: no reviews of research using German-speaking sample groups

Conclusiveness: level B, but due to the lack of relevant publications it is impossible to estimate the real extent of the problem

- **Universally targeted addiction prevention can affect consumption behaviour negatively as well as positively. B⁴⁸**
- **Most negative outcomes in general addiction-prevention programmes occur in the context of mixed effects on alcohol consumption (both positive and negative). B⁴⁸**
- **There is a risk, with selective addiction prevention, of consumption behaviour being influenced in non-preventive ways. B⁴⁴**

Quantitative indications: none

4.3.5 Gender specificity – results

Focus: general effectiveness among girls and boys

Blake et al. [49; S; 2001; 28 studies; 1980–2000], in their → review of addiction prevention among girls, report that researchers in the field of prevention have paid little or no attention to gender-specific outcomes, and only three of 14 → reviews have addressed the issue. **Results:** 10 studies were identified which involve separate analyses for girls and boys. The finding in nine of these was that only girls had benefited from the measures studied (i.e. had consumed less) or that girls had derived greater benefit. Only one study produced the opposite finding. Of the 18 studies in which the analysis of effectiveness included the effects of gender-group dynamics, four reported significant interactions. The authors identified four programmes specially

designed and/or implemented for girls. The studies concerned used a high-risk sample group. In three cases, desired effects on consumption were recorded, while one study reported a more marked increase in substance consumption in the → treatment group. **Authors' conclusions:** gender-specific differences are most apparent among younger teenagers and in relation to smoking. This stock-taking does not rule out the possibility that other groups of researchers may have observed significant or insignificant gender-specific differences but have simply not reported them. In most of the studies that report greater success for addiction prevention among girls there is a focus on resilience, limiting social influences and changing perceptions of social norms. The authors conclude that, given the indication of differing levels of effectiveness, more research should be directed at the role of gender in addiction prevention.

4.3.6 Gender specificity – conclusions

Substances: undifferentiated

Geographical scope: no reviews of research using German-speaking sample groups

Conclusiveness: level C, but due to the lack of relevant publications it is impossible to estimate the real extent of the problem

- Girls' consumption behaviour is more susceptible to influence by addiction-prevention measures. C⁴⁹

Quantitative indications: none

4.3.7 Efficiency – results

In times of financial constraint, interest centres not only on the question of effectiveness but also on the cost-benefit ratio, or efficiency, of addiction-prevention measures. Individual studies of efficiency have been conducted in the field of prevention generally since 1990, but until 1998 (Chatterji *et al.* 1998) no such research had been published in relation to addiction prevention. The search strategy adopted for this report could identify no relevant → reviews and only two individual studies, the results of which are outlined in the following.

It is possible to measure the costs and benefits of addiction-prevention measures using cost-effectiveness analysis (CEA) or cost-benefit analysis (CBA) (Chatterji *et al.* 1998). Cost-effectiveness analysis seeks to establish which of a number of available alternatives is the most cost-effective method of realising a given addiction-prevention measure (e.g. in terms of additional years of life gained or periods of hospitalisation avoided). Cost-benefit analysis sets out to determine whether a measure is worth its cost, in other words whether the money invested in implementing the measure will

produce a corresponding financial saving at a later date. Costs and benefits are expressed in this case as monetary units. There is an instrument available for assessing costs (Chatterji *et al.* 2001). Given the evident difficulty of expressing the benefits of addiction prevention in monetary terms, the individual studies considered involve cost-effectiveness analyses which determine the costs of an additional year of life gained as a result of the prevention measure implemented.

Secker-Walker and Kollegen (1997) analysed the efficiency of a mass-media campaign conducted in conjunction with a school programme. The intensive campaign consisted of 36 television advertisements and 17 radio advertisements broadcast over four years and tailored to the age of the target audience. The school programme consisted of a total of 15 sessions with pupils aged 10 to 15. Two years after the measures had finished (when the pupils were aged 15 to 18) the prevalence of weekly smoking in the sample group that had only participated in the school programme was 25.9%. Among those pupils who had also been exposed to the mass-media campaign, 20.4% were smokers. It was estimated that the lifespan of a 20-year-old female smoker will be five years less than that of a non-smoker of the same age; for males of the same age the corresponding difference is six years. Results: the additional years of life – in relation to the costs of developing and broadcasting the media campaign – were calculated to reflect a cost of USD 696 each. If only the broadcasting cost is included in the equation the figure falls to USD 167 per additional year of life. **Authors' conclusion:** on the basis of these calculations we can make comparisons with cost-effectiveness analyses for other types of measure to help smokers quit: for example, short-term medical intervention costs between USD 700 and USD 2 000, and the cost of additional nicotine substitution treatment ranges from USD 4 000 to USD 9 000 per year of life gained. The mass-media campaign thus appears as an attractive prevention option, comparing very well with alternative measures (such as those designed to help smokers to quit, or to prevent cancer).

DiFranza and Kollegen (2001) calculated the potential efficiency of enforcing laws on the sale of tobacco to young people. **Results:** if a reduction in the number of smokers, or the prevalence of smoking, of say 5% could be achieved through monitoring measures at a cost of USD 150 per sales outlet – thus requiring a total of USD 82 million – one additional year of life would cost USD 1 300. In a model project that achieved a never-to-be-replicated reduction rate of 25% the corresponding figure was calculated at USD 14. **Authors' conclusion:** subject to the cost of monitoring sales outlets, the number of outlets and the reduction rate achieved, this approach is substantially more efficient than intervention at a later stage to help existing smokers to quit. The calculation here is concerned with the potential financial benefit of the measure, however, and there is thus no basis for conclusions about its actual effectiveness in terms of a rate of reduction.

4.3.8 Efficiency – conclusions

Substances: tobacco

Geographical scope: no reviews of research using German-speaking sample groups

Conclusiveness: level E

No conclusions

Quantitative indications: none

4.3.9 Prevention of smoking - conclusions

Note: more extensive conclusions can be found in the results sections for the relevant fields of intervention.

Family

In relation to the family as a system, there is no available information about the effectiveness of addiction-prevention measures directed at tobacco use.

School

- **Interactive school-based programmes have preventive effects on tobacco consumption. A^{6, 12}, B^{11, 14}, C⁹, D¹⁰**
- **The effects in relation to tobacco are long term (lasting two to three years). A⁷, B¹¹, D¹³**
- **Focusing solely on tobacco is more effective than focusing on a number of substances. A⁶**
- Prevention programmes can induce young people who are already smokers to quit. D¹³

Leisure

In relation to leisure as a system, there is no available information about the effectiveness of addiction-prevention measures directed at tobacco use.

Media

- **Mass-media campaigns in combination with other components (school-based, community-based or national programmes) have preventive effects on tobacco consumption.** C^{27, 26}
- **Isolated mass-media campaigns have no preventive effects on tobacco consumption.** C^{27, 26}
- Media campaigns tend to have more influence in preventing the uptake of smoking as opposed to inducing existing smokers to quit, and tend to be more effective with younger than older teenagers. D²⁸

Community

- Cross-system projects have demonstrable preventive effects on tobacco consumption. F (pro: A⁶; inconclusive: B³², D³¹)

Legislation and regulations

- **Higher tobacco prices reduce the prevalence and volume of tobacco consumption.** C³⁵
- **Isolated measures to prevent the sale of tobacco to young people under the legal age do not reduce consumption.** C^{36, 37}
- **National programmes are effective in altering the risk factors and protection factors in relation to smoking but not in affecting consumption behaviour.** C³⁸
- A comprehensive long-term ban on the advertising of tobacco products has preventive effects on consumption behaviour. E³⁹
- Programmatic legislative provisions at community level (to finance programmes, implementation efforts and/or quality assurance as well as programme delivery) have an indirect long-term effect on tobacco consumption. D³⁴
- Regulatory provisions at community level (on rates of duty, and on monitoring or supervising compliance with the law) have a direct, short-term effect on tobacco consumption. E³⁴

Risk groups

- **Selective addiction prevention in the form of school-based social-skills programmes or mentoring programmes reduces consumption behaviour.** B⁴⁴
- **There is a risk with selective addiction prevention of influencing consumption behaviour negatively.** B⁴⁴

Unwanted effects

- Universal addiction prevention can influence consumption behaviour negatively as well as positively. B⁴⁸
- Negative effects in the context of general addiction-prevention programmes occur less commonly in relation to tobacco than other substances. B⁴⁸

Gender specificity

- Girls' consumption behaviour is more susceptible to influence by addiction-prevention measures. C⁴⁹

4.3.10 Prevention of alcohol abuse (undifferentiated) – results

In addition to the findings described above in the various fields of intervention, a further → review, evaluating psychosocial interventions as a whole, informs our assessment of the effectiveness of measures to prevent alcohol abuse.

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	UNIVERSAL Selective Undifferentiated	Family School Leisure Media Community Legislation and regulations UNDIFFERENTIATED	Tobacco ALCOHOL Cannabis Other illegal drugs Undifferentiated

Focus: prevention of alcohol abuse

In a Cochrane Library publication, Foxcroft *et al.* [33; 2003; S; 56 studies (41 → RCTs, 14 → CTs, 1 → ITS); 1968-2000] present an up-to-date extended → review of work done in 1997 which concluded then that the methodological quality of the studies included was too poor to form the basis for reliable conclusions or recommendations. The more recent studies of psychosocial interventions generally (31 of them school-based), which are included in the latest review, certainly represent a considerable improvement in terms of methodology, and thus now constitute a basis for making recommendations, although certain methodological shortcomings remain. **Results:** 56 studies of 24 alcohol-centred programmes and 32 general addiction-prevention programmes were evaluated for their effects in the short, medium and long term. Over the short term (up to one year after pre-intervention testing) 15 programmes were effective to some extent (effects being measured on one or two of a number of consumption variables), 24 were ineffective and four reported negative results. In the medium term (one to three years after pre-intervention testing) 12 programmes were effective to some extent, 19 were ineffective and two had a negative effect. Only eight programmes reported long-term effectiveness (over more than three years), with three partially effective and five ineffective. The authors identify 18 ineffective programmes which, on the basis of the most recent research, should be discontinued. An → intention-to-treat reanalysis of the three long-term effective programmes yielded, in the case of Spoth's comprehensive Strengthening Families programme, a 'number needed to treat' (NNT) of nine: in other words, if nine children have been involved in the Strengthening Families Programme then one less child will abuse alcohol in the four-year follow-up period than would have been the case with a standard school programme. This compares, for example, with NNTs of between 17 and 25 for culturally sensitive life-skills training and 24 to 83 for Botvin's life-skills training

programme. **Authors' conclusion:** the studies do not provide a basis for any clear findings on the effectiveness of psychosocial intervention in the short and medium term. Among the three long-term effective programmes, the intention-to-treat reanalysis highlights in particular Spoth's family-orientated approach in the Strengthening Families programme as noteworthy with regard to prevention of alcohol-related problems. Culturally adapted competence-based programmes are also to be recommended. The life-skills approach gives fewer grounds for optimism. As a rule, a community-based approach may be more cost effective than a multiplicity of different programmes for different groups. There are no characteristics that clearly distinguish effective from ineffective programmes. Nor is it significant whether programmes focus solely on alcohol or target a number of substances. Because, however, most of the studies were conducted in the USA it is questionable whether these results are generally applicable in other countries.

4.3.11 Prevention of alcohol abuse – conclusions

Note: more extensive conclusions can be found in the results sections for the relevant fields of intervention.

- **Psychosocial measures, assessed collectively, are inconsistent in terms of their → preventive effects on alcohol consumption. B³³**

Family

- **Comprehensive family-based approaches (involving training for parents, children and whole families) have preventive effects on alcohol consumption. C^{1, 2}**
- **Parental training in isolation influences risk factors but not alcohol consumption. C¹**
- **Family-orientated measures are particularly effective with non-consumers. C¹**
- **Effects on consumption and on risk factors may appear at a later stage – as so-called 'sleeper effects'. D⁴**

School

- **Interactive school-based programmes have preventive effects on alcohol consumption. A⁶, B¹⁴, C^{18, 9}, D¹⁰**
- **The effects in relation to alcohol are long term (over two to three years). A⁷, B¹⁴**

Leisure

In relation to leisure as a system, there is no available information about the effectiveness of addiction-prevention measures directed at alcohol consumption.

Media

- TV advertisements designed to prevent alcohol-impaired driving, in combination with other measures, have effects on the prevalence of alcohol-impaired driving and of alcohol-related accidents. E²⁹
- Warnings on alcohol packaging, in isolation, have no effect on alcohol consumption. E²⁹

Community

- Cross-system projects have preventive effects on alcohol consumption. F (pro: A⁶; inconclusive: C², D³¹)

Legislation and regulations

- **Raising the minimum legal age for alcohol consumption has preventive effects on alcohol consumption. B⁴¹**
- **Lower legal blood/alcohol limits for young and/or inexperienced drivers reduce the incidence of alcohol-related accidents. C⁴⁰**
- Higher 'total' alcohol prices reduce consumption by both moderate and heavy drinkers. D⁴²
- Programmatic legislative provisions at community level (to finance programmes, implementation efforts and/or quality assurance as well as programme delivery) have an indirect long-term effect on alcohol consumption. D³⁴
- Regulatory provisions at community level (on rates of duty, and on monitoring or supervising compliance with the law) have a direct, short-term effect on alcohol consumption. E³⁴

Groups at risk

- **Selective addiction prevention, in the form of school-based social-skills programmes or mentoring programmes, has→ preventive effects on consumption behaviour. A¹⁶, B⁴⁴, D^{45, 46}**
- There is a risk with selective addiction prevention of influencing consumption behaviour negatively. B⁴⁴

Unwanted effects

- Universal addiction prevention can influence consumption behaviour negatively as well as positively. B⁴⁸

- Negative effects in the context of general addiction-prevention programmes occur more commonly in relation to alcohol than other substances. B⁴⁸

Gender specificity

- Girls' consumption behaviour is more susceptible to influence by addiction-prevention measures. C⁴⁹

4.3.12 Prevention of illegal drug use (undifferentiated) – results

In addition to the findings described above in the various fields of intervention, a further → meta-analysis, evaluating psychosocial interventions as a whole, informs our assessment of the effectiveness of preventive measures in relation to illegal drug use.

RESULTS	TARGET GROUP	FIELD OF INTERVENTION	SUBSTANCE
EFFECTIVENESS Key elements	UNIVERSAL Selective Undifferentiated	Family School Leisure Media Community Legislation and regulations UNDIFFERENTIATED	Tobacco Alcohol CANNABIS OTHER ILLEGAL DRUGS Undifferentiated

Focus: prevention of illegal drug use

White and Pitts [47; 1998; M; 71 studies; 1980–1997] conducted a meta-analysis reviewing the findings of 71 studies (including 20 of high quality) on the prevention of illegal drug use. Most of the programmes evaluated (89%) were based in schools; six were based in therapeutic or medical settings and one in the family context. Half of them (47%) focused solely on cannabis, 25% on cannabis and cocaine and 24% on 'drugs' generally. **Results:** it was found that 64% of the programmes were capable of influencing attitudes, while 27% had an influence on behaviour. Considering only the high-quality studies, there was an influence on participants' consumption behaviour in half (56%) of the programmes concerned. In two meta-analyses, programme → effect size was calculated respectively up to one year after the end of the intervention (14 records) and after two years or more (11 records). The resulting effect sizes were .037 and .018. No iatrogenic effects – i.e. negative effects caused by the intervention – were observed. **Authors' conclusion:** the effects of prevention programmes on the consumption of illegal drugs are minor and diminish over time. Prevention is, however, associated with reduced consumption. Life-skills training emerges as the best type of programme. The effective programmes include unspecific interventions as well

as programmes focusing on consumption behaviour. Other aspects associated with success are the inclusion of refresher sessions, a programme length of more than 10 sessions and the presence of additional community components. In summary, the authors describe the small effect size as having virtually no practical significance. The variation explained by participation in the programme was just 0.14%: in other words 3.7% of the young people had avoided, delayed or reduced drug consumption. The programmes may therefore be capable of effecting short-term delays or reductions in consumption but their long-term effects remain to be confirmed.

4.3.13 Prevention of illegal drug use – conclusions

Note: more extensive conclusions can be found in the results sections for the relevant fields of intervention.

- **Psychosocial prevention measures have short-term preventive effects on the consumption of cannabis and other illegal substances. C⁴⁷**

Family

In relation to the family as a system, there is no available information about the effectiveness of addiction-prevention measures directed at the consumption of illegal substances.

School

- **Interactive school-based programmes have preventive effects on consumption of illegal substances. A^{6, 47}, B¹⁴, C^{18, 9}**
- The effects in relation to cannabis and other illegal substances are long term (over at least two years). F (long-term: B¹⁴; short-term: C⁴⁷)

Leisure

In relation to leisure as a system, there is no available information about the effectiveness of addiction-prevention measures directed at the consumption of illegal substances.

Media

In relation to the media as a system, there is no available information about the effectiveness of addiction-prevention measures directed at the consumption of illegal substances.

Community

- Cross-system projects have preventive effects on cannabis consumption. F (pro: A⁶; inconclusive: D³¹)

Legislation and regulations

- **Decriminalisation of cannabis does not increase consumption and leads to reduced social costs. C⁴³**

Groups at risk

- **Selective addiction prevention, in the form of school-based social-skills programmes or mentoring programmes, has→ preventive effects on consumption behaviour. A¹⁶, B⁴⁴**
- **There is a risk with selective addiction prevention of influencing consumption behaviour negatively. B⁴⁴**

Unwanted effects

- **Universal addiction prevention can influence consumption behaviour negatively as well as positively. B⁴⁸**
- **Negative effects in the context of general addiction-prevention programmes occur less commonly with cannabis and other illegal drugs than with other substances. B⁴⁸**

Gender specificity

- **Girls' consumption behaviour is more susceptible to influence by addiction-prevention measures. C⁴⁹**

4.4 Methodological quality of reviews in the field of addiction prevention

This research entailed evaluation of eight → meta-analyses, 22 systematic → reviews, 13 unsystematic → reviews and four → best-practice surveys. Also referred to were an article containing personal conclusions from a → meta-analysis by an acknowledged expert in the field of addiction-prevention measures in schools (Tobler 2000), and another work which, given the shortage of high-quality studies, offers at least an indication about the effectiveness of banning tobacco advertising (Hanewinkel and Pohl 1998). These 49 publications from the years 1993 to 2003 were identified and selected systematically.

It is hard to assess the conclusiveness of the reviews as their quality depends in each case on the quality of the studies they cover. While prevention research has certainly made progress in implementing standards for quantitative intervention studies, the →reviews comment critically on numerous shortcomings.

	Family	School	Leisure	Media	Community	Legislation and regulations	Groups at risk	Alcohol	Illegal drugs	Negative effects	Gender	Total
Meta-analyses		6(1)*			(1)*		1		1			8
Systematic reviews	3	5		3	1(2)*	6(1)*	1	1		1(1)*	1	22
Unsystematic reviews	1	4	2	2	1	2	1					13
Best-practice surveys	1				1		2					4
Other articles		1					1					2
Total	5	16	2	5	3	9	5	1	1	1	1	49
Conclusiveness	C	A-C	-	B/C	F/D	B/C						

* Although already included under another field, these articles also contain information relevant to this field.

Table 4: Type and number of publications and predominant level of conclusiveness for the findings in each field

In evaluating the methodological quality of the → reviews, we drew on established standards (including those of the Cochrane Library and Alderson *et al.* 2004). The quality criteria applied were thus the following: systematology of the procedure for seeking and selecting individual studies; transparency of search and selection; number and quality of individual studies; transparency of evaluation procedure; and rigour and strength of results and conclusions. Table 4 shows the type and number of publications on which conclusions were based in each area. For conclusions covering various fields of intervention, reference was also made to publications with a corresponding breadth of scope.

Most of the publications in the literature base are systematically prepared works (→ meta-analyses and systematic → reviews) that have sought to consider all potentially relevant individual studies. In most cases they reported the criteria used for seeking and selecting individual studies, thus ensuring a sufficient level of transparency. The number of individual studies covered by the reviews varied enormously (from three to more than 200). Approximately one third of the publications chose to include only high-quality studies. The differing quantities of individual studies reflected the fact that researchers' selection criteria differed according to their particular areas of interest, but there was often a considerable degree of overlap in the

studies used to produce findings in any given field. In the great majority of cases there was a cogent evaluation strategy and the conclusions were rigorously arrived at and convincing. This applied to the unsystematic as well as the systematic reviews, many of the former being classified as unsystematic because – although they reported use of a systematic search – their search and selection criteria were not recorded. For whatever reasons, it would appear that studies for most of the unsystematic reviews were chosen selectively.

Although most of the works meet the standards formulated for → reviews, their methodological quality varies considerably across the different fields of activity in addiction prevention. This is not surprising given that the individual studies are also of widely varying quality. As Table 4 shows, the greatest number of reviews and the highest level of quality are to be found in the field of school-based work. The current state of research is also reflected in each case in the conclusiveness ratings, which vary from field to field. In terms of quantity of studies, the field of ‘Legislation and regulations’ is the second best provided for, although no → meta-analyses are available here. This may be explained in part by the fact that the ideal form of quantitative intervention research – involving trials or quasi-trials – is not conducted (and indeed cannot be conducted) to test the effectiveness of legislative measures. The level of scientific rigour, both in individual studies and in reviews, is thus much higher in relation to school-based measures (and generally with regard to behavioural prevention) than it is in relation to legislative measures or circumstantial prevention. This distinction needs to be borne in mind in any attempt to compare effectiveness in different fields.

There is clearly a lack of high-quality studies and therefore also of reviews in the fields of leisure-related, family-related and community-related measures. We still know little about addiction prevention with regard to groups at risk, in terms of its negative outcomes and in relation to gender.

What we regard as the most serious shortcoming, however, is the absence of reviews on the effectiveness of addiction-prevention measures in Europe and specifically in German-speaking countries – a situation obviously explained in part by the small number of individual studies. The only relevant work identified was an unsystematic → review on the theme of German life-skills programmes, which appeared in a non-scientific publication. Springer (1997) assesses the implications of seeking to apply US-dominated research results to Europe and Germany in particular. The target outcome of prevention work in the USA is abstinence, whereas aims in Europe differ. Here, people are encouraged to use alcohol in a way that does not involve risk and to abstain from tobacco and illegal drugs. Where abstinence is not achievable, the aim is a low-risk level of consumption. The differing goals are associated with differing strategies (in the USA the preferred strategies are direct exertion of influence and training, while in Europe health education is the priority) and it is thus likely that the measures used (which are themselves quite distinct) will produce differing levels of effectiveness.

4.5 Our findings compared with the results of other reports

Many publications on addiction prevention can be classed as systematic studies in the sense in which we have used that term here: i.e. they attempt, on the basis of reviews or a mix of reviews and individual studies, to produce conclusions about the effectiveness of a range of measures. While asking similar questions and using similar methodology, they do not share our conclusions: it is thus important that the respective sets of conclusions should be compared. In the following, therefore, we set our findings alongside those of the two most influential current studies in the field of prevention.

4.5.1 WHO report 2002

In 2002 the World Health Organisation (WHO) issued a report entitled *Prevention of psychoactive substance use: a selected review of what works in the area of prevention* (Hawks *et al.* 2002). On the basis of comprehensive literature-search and selection processes, spanning the period 1985 to 2001 and including research from developing countries, the report set out to investigate five areas.

It first evaluated 15 → reviews and 15 individual studies concerned with regulation of the physical and economic availability of alcohol. The authors conclude that changes in minimum legal drinking age, in the concentration of sales outlets and their opening times and in the price of alcohol all influence its consumption, chiefly in the direction of higher consumption. They find that it is not just alcohol consumption generally that increases but also the incidence of problem drinking and its negative physical consequences, road accidents and violence. The authors do not explicitly indicate whether the inverse relationship, as noted in our study, also applies – i.e. whether restricting the availability of alcohol via the measures in question leads to reduced consumption. The only relevant conclusion in that area is that legislation to penalise alcohol-impaired driving does not reduce either alcohol consumption generally or problem drinking.

The second area of investigation concerns the effectiveness of regulating the physical and economic availability of illegal drugs. Except when considering the decriminalisation of cannabis consumption, the authors do not address what is the behavioural goal in this report, namely alteration in young people's consumption. We have not therefore considered it useful to report their findings here. With regard to decriminalisation as a preventive measure, Hawks and Kollegen (Hawks *et al.* 2002) reach the same conclusion as we do, namely that decriminalisation does not increase consumption but it does lead to a reduction in social costs.

The third area of investigation concerns the effectiveness of mass-media campaigns and media advocacy, as well as advertising and advertising bans, in relation to young

people's consumption. In this field too our conclusions are similar to those of the WHO: that media campaigns in isolation will not have preventive effects on young people's consumption; their value lies in the transmission of knowledge and in their role as an adjunct to legislative measures. In combination with other measures (notably legislative provisions) they may well achieve preventive effects.

Hawks *et al.* (2002) share our view that there is little scientific information available from which to assess the effectiveness of community projects. Most of the relevant → reviews have reported an effect on acceptance of health-policy measures and on knowledge, with virtually no attention paid to personal consumption. Only two individual studies have produced positive findings in relation to levels of consumption. By contrast, the reviews have tended to focus on how communities should implement their projects, but the basis on which the relevant recommendations are made is unclear.

The final area investigated by Hawks and Kollegen is that of school-based programmes. They draw on 11 high-quality reviews and eight reviews of lesser quality from the period 1992 to 2000, as well as 14 individual studies that are discussed in the reviews. They use these works to consider 10 representative school-based addiction-prevention programmes conducted over the last 20 years. With regard to the programmes' effectiveness, the authors conclude that – contrary to the findings in this report – no long-term effects are observable. They also suggest that effects are produced on sub-groups rather than the majority of school students. This difference of assessment reflects the differing bases of the two reports. Our conclusions are heavily influenced by the → meta-analysis carried out by Tobler *et al.* (2000) and by Skara's and Sussmann's analysis (2003) of long-term effects, which Hawks *et al.* (2002) do not take into account.

In an attempt to bring the picture more up to date, the WHO report reviews five individual studies that appeared after 1997. Most of these evaluated prevention of alcohol abuse, with three reporting universal effects and two differential effects. The WHO report includes extensive discussion of the characteristics of effective school-based programmes – a theme that is merely touched upon in this report due to lack of space. There is one aspect, however, little discussed in the literature to date, which we intend to consider in more depth here. Most of the studies covered in the report assess programmes in which the target outcome was abstinence and which consistently failed to achieve that outcome. This suggests a need to develop programmes that aim for outcomes other than abstinence (for example minimisation of damage).

4.5.2 Babor *et al.* 2003

Babor *et al.*, in *Alcohol: no ordinary commodity* (2003; German translation 2005) offer a report by acknowledged experts in the field on alcohol consumption, its consequences, and measures to reduce its negative consequences. The book includes a wealth of conclusions and recommendations, which it is not possible to reproduce here. Moreover, unlike our report, this study draws conclusions not just about teenagers and young adults and not just about consumption but also about the negative consequences of consumption. We therefore intend to consider here only those conclusions which are most scientifically sound and which concern high-risk groups – including young people (see Babor *et al.* 2003, pp 264 *et seq.*). The most impressive evaluation concerns rates of duty and the pricing of alcohol products. The report concludes that price-related measures are highly effective, are strongly supported by research, have been tested in many different cultures and cost little. Our own report's conclusions on this point are similarly positive. The same applies to raising the minimum legal age for alcohol consumption. Our evaluations differ on the effectiveness of school-based programmes for the prevention of alcohol abuse. Our own conclusion is that interactive programmes do have preventive effects on consumption and work in the long term, even though the general evidence base with regard to psychosocial intervention is inconsistent. Babor *et al.* (2003), on the basis of very sound research, conclude that this approach is ineffective and costly. The main reason for these contradictory findings is the difference in the literature bases used. Whereas Babor *et al.* (2003) base their conclusion chiefly on the systematic, high-quality but non-school-specific → review by Foxcroft *et al.* (2003, [33]), the primary basis for our own conclusion is the high-quality → meta-analysis concerning school-based prevention published by Tobler *et al.* (2000), to which Babor *et al.* do not refer. In our view it is not possible to state that school-based programmes are ineffective, even if no conclusions have been reached about their cost-benefit ratio and their effectiveness three years after intervention.

5. DISCUSSION

The aim of this report is to produce evidence-based conclusions about the effectiveness of measures to prevent substance abuse by children and young people. To do this it draws on the findings of high-quality surveys of research (i.e. → reviews and → meta-analyses).

The report relies on reviews and meta-analyses because they permit the collective assessment of many individual sets of findings and thus represent something close to a representative conclusion about the results produced by research. The great majority of the 49 reviews and other works consulted meet the crucial criteria for representativity (namely the number and quality of individual studies covered and the systematic nature of procedures for seeking out and evaluating such studies).

Using this methodological approach, we opted to assess the status quo in addiction prevention rather than the best possible measures. It is an approach geared to producing an average judgment about a range of measures rather than a quality assessment of individual measures.

Because most of the relevant research to date, including most of the individual studies included in the → reviews, has been done in the USA, the general applicability of the conclusions is debatable. There are sound arguments to the effect that results produced in the United States cannot simply be transposed to a European, or specifically a German, context (Springer 1997). The target outcome of prevention work in the USA is abstinence, whereas aims in Europe differ. Here people are encouraged to use alcohol in a way that does not involve risk and to abstain from tobacco and illegal drugs. Where abstinence is not achievable the aim is a low-risk level of consumption. The differing goals are associated with differing strategies (in the USA the preferred strategies are direct exertion of influence and training, while in Europe health education is the priority) and it is thus likely that the measures used (which are themselves quite distinct) will produce differing levels of effectiveness.

Ultimately of course, reviews of research findings lend themselves to conclusions only about those measures that are the subject of published research. Research and the financing of research take place in a social context and they are thus influenced by prevailing priorities and political trends.

It is impossible to assess the extent to which prevention has negative effects, because published work about such effects is relatively rare. One reason for this may be a conflict of interests in the context of internal evaluation, where programmes are developed and implemented by the same people whose task it is to evaluate them. Another may be the acknowledged fact that articles about programmes' ineffectiveness or their negative effects are less likely to be selected for publication. If, however, there is no information about potentially damaging effects, then mistakes will be repeated. One effect of this practice in publishing is thus to impede the successful development of addiction prevention.

These reservations clearly indicate that our conclusions are not absolute. Nonetheless, we consider that to consult high-quality review work was the best approach currently available.

5.1 What works and what does not?

Our working definition of ‘effectiveness’ is → preventive effects on consumption behaviour among teenagers and young adults, in other words the prevention, delay and/or reduction of substance consumption as a result of the measures in question. Unfortunately we were not able to realise our initial intention of producing differentiated conclusions on these three aspects of consumption behaviour, because neither the individual studies nor the reviews draw a distinction between them. Guidelines on prevention research should include a recommendation that this distinction be made.

On the basis of the literature consulted it is possible to identify effective measures for almost all the spheres of life in which young people grow up. These measures are described in detail in the conclusions on specific fields of intervention. On the basis of conclusiveness ratings from A (for a → meta-analysis based on high-quality studies) through B (for a systematic → review based on high-quality studies) and C (for a meta-analysis or systematic review based on all available studies) to D (for an unsystematic review), it is possible to recommend the following:

- in a **family** context, offering comprehensive measures that combine training for parents, children and family units (chiefly relevant to alcohol, conclusiveness rating C);
- at **school**, running interactive programmes that build on social-influence or life-skills models (relevant to all substances, conclusiveness rating A);
- at **school**, **avoiding** one-off information sessions, isolated emotional-education initiatives and other non-interactive measures (relevant to all substances, conclusiveness rating A);
- using **media** campaigns to accompany other measures, and not in isolation (relevant to tobacco, conclusiveness rating C);
- using **legislative measures** to influence the price of substances (relevant to tobacco and alcohol, conclusiveness rating C and D) and the legal age for their consumption (relevant to alcohol, conclusiveness rating B).

From a theoretical perspective the most convincing approach is that of community-based, cross-system prevention but, to date, too few relevant studies have been carried out to produce any evidence-based assessment of effectiveness for this type of intervention. Results from the few large-scale, high-quality studies that have been conducted are inconsistent. Drawing on two sets of findings in evaluative literature concerned with other fields of intervention, we can speculate about reasons for the inconsistency. On the one hand, comprehensive approaches (using, for example, both the school and family contexts) and approaches involving additional components (see the discussion about use of media) seem to have demonstrated their worth, suggesting that community projects should be effective. On the other hand, in the school context, the size of projects has emerged as a critical factor for their success (reflecting not only problems of implementation but also a lack of orientation to the needs of specific class groups), and this is clearly not desirable with a standardised procedure (Tobler *et al.*

2000). Considered together, these two sets of findings may indicate that although the principle of a cross-system approach is useful, each 'community' must proceed on the basis of addressing its specific needs in order to bring into play the necessary factors that make community-based addiction prevention successful.

Leisure is a field of intervention that is significant for young people's development, and it is one where many types of measure are on offer (including measures aimed at preventing substance abuse), yet no evidence-based recommendations can be made in their regard. This reflects a shortage of studies (or at least of high-quality studies) about how consumption behaviour is influenced in this field of intervention. Carmona and Stewart (1996, p. 18) put their finger on the problem when they asserted that most programmes are developed and implemented 'because they sound like a good idea and not because there is strong evidence to support them'. The most promising type of intervention appears to be mentoring programmes with groups at risk, where the aim is to develop a strong attachment to an adult. Peer programmes in the field of leisure enjoy a certain popularity in Germany but they have yet to prove their worth as evidence-based forms of intervention.

School is the setting for most of the studies that have been conducted so far. The effectiveness of school-based programmes which address school as a system, rather than focusing on individual pupils, has not been adequately demonstrated. A survey of the content of school-based measures reveals an emphasis on individual influencing factors; in the programmes evaluated, school as a system (the class, the teachers, teaching methods and the way the school is organised) is rarely the focus of attention. To use school as a field of intervention merely in order to gain access to young people, would represent a failure to exploit its full potential in terms of addiction prevention.

Addiction-prevention measures can sometimes have the effect of increasing consumption levels. This is particularly true in the case of measures directed at groups of young people identified as being at risk. Research into the group processes that occur in selective addiction-prevention initiatives (Dishion *et al.* 1999) has identified 'deviant talk' as a cause of unwanted outcomes. It is argued that the group situation creates an opportunity for wayward young people to reinforce one another's deviant behaviour, effectively encouraging one another to pursue such behaviour. Appropriate prevention measures need to be directed at curtailing this effect.

5.2 Behavioural versus circumstantial prevention

Discussion of the relative merits of behavioural and circumstantial preventive measures raises the question of what is the ‘best’ type of measure, and how to prioritise the behavioural as against the circumstantial approach. To answer that question we need to consider many aspects (such as acceptance, potential for implementation and sustainability). The nature of the evidence base is thus one aspect among many. No random trials have been conducted to test the effectiveness of measures of all types or to compare the behavioural and circumstantial approaches. At the same time, we can certainly draw conclusions about what should not be recommended (see the conclusions sections and the selected recommendations above). It is clear that a successful circumstantial prevention measure (such as a price increase) has a stronger absolute effect on the population (i.e. greater impact) than a behavioural life-skills programme, because, with a similar level of effectiveness, it reaches more people. On the other hand, a behavioural prevention measure can have the effect of preventing many types of problem behaviour because, for example, sound problem-solving strategies protect people not only against substance abuse but also against many other types of psychological problem. The foregoing is not applicable with regard to restricting the availability of psychoactive substances. The question of which measure to select is a political one that cannot be answered by a scientific report.

In theory there are many arguments for combining circumstantial and behavioural prevention. The general theory of human behaviour, for example, postulates that behaviour is the product of interaction between the person and the environment ($B = P \times E$). With regard to young people’s development, and thus the development of substance consumption by young people, it is assumed that behaviour is determined by young people’s interactions with different ‘worlds’ or systems (i.e. the family, school, the world of leisure, the media, the community and society). Equally important, for any combined approach, is the fact of interactions between the different worlds. Different effects are thus produced by the two scenarios in which: a) consumption in the home is responsible and society too is characterised by clear and responsible consumption standards; and b) young people learn about the risks of substance consumption but at the same time are confronted by high availability and many attractive substance-consuming models who set an opposite example. Moreover, because people’s personality profiles differ it cannot be assumed that a single type of measure will reach everyone, even though universal approaches set out to do just that. Groups at risk need different types of intervention from those used with young people who are merely identified early as potentially at risk in the future; children need a different approach from that used with adults, and boys and girls need to be treated differently. All this being so, and given the lack of empirical evidence, we maintain that the ideal is a cross-system concept of addiction prevention, using both behavioural and

circumstantial prevention measures in different settings and addressing different target groups in different ways.

No description of an ideal approach to addiction prevention can be complete without reference to the concept of health promotion enshrined in the WHO's Ottawa Charter (as quoted by Kaba-Schönstein 2003) – namely that health promotion is 'the process of enabling people to increase control over, and to improve, their health'. As part of that process 'an individual or group must be able to identify and to realise aspirations, to satisfy needs, and to change or cope with the environment'. Health-promotion action is defined as developing healthy public policy, creating supportive environments, strengthening community action, developing personal skills and reorientating health services. The health-promotion approach aims to improve health by improving the conditions for health (see Kaba-Schönstein 2003). Addiction prevention, as it is assessed in this report, does attempt to foster health-promoting factors, although its goal of improved health is also pursued through efforts to suppress risk factors for the specific disease of addiction. Unlike the health-promotion approach, it addresses addiction-specific → risk factors and protection factors. The limited research that has been done on this question (see also Reese and Silbereisen 2001) suggests that, if substance abuse is to be prevented effectively, the specificity of addiction prevention should not be sacrificed to the unspecific aim of health promotion. This is not, however, to dismiss the significant degree of overlap between health promotion and efforts to prevent many forms of behaviour that put health at risk – and, indeed, the overlap suggests ways of making prevention more efficient. One example of a comprehensive behavioural approach is the British school programmes entitled Skills for the Primary School Child [TACADE 1990] and Skills for Life, [TACADE 1994]). These involve life-skills training from a child's first year at school through to age 16, tailored according to age, to different areas of development (for example, the self, interpersonal relationships, family life and work) and to prevention in different fields (ranging from HIV/AIDS and sexual abuse through aggression and xenophobia to substance abuse and gambling). The sessions are integrated into the school subject known as 'Personal and Social Development'.

5.3 What is 'effectiveness' in terms of addiction prevention?

In this report, effectiveness means the quality of producing 'preventive effects on substance consumption' because this is the crucial variable in many individual studies and thus also in → reviews and → meta-analyses. We shall conclude by discussing how meaningful this is as an outcome variable.

The aim of addiction prevention is to prevent abuse of, and dependency on, psychoactive substances in a sustained way. Virtually no studies, however, review this ultimate aim. In the 49 publications referred to here and the countless individual

studies they draw on, only one directly relevant conclusion is offered. In most cases the effectiveness of intervention is measured with reference to short-term, statistically highly coincidental but not necessarily practically relevant changes in consumption variables, for which the theoretical base is not entirely clear. This approach meets the requirements for →evidence basing as formulated by Pentz (2003), namely that the term evidence-based prevention may be applied to programmes, strategies or policy initiatives which are tested under rigorous conditions (involving experimental or quasi-experimental research design, peer-reviewed publication and long-term effects at a behavioural level after at least a year) and which demonstrably (i.e. in a statistically significant way) prevent, delay or reduce young people's consumption of substances (rather than simply influencing their knowledge and attitudes). In our view, however, making consumption the only yardstick for effectiveness is more than questionable, particularly in relation to sample groups for prevention measures, where by definition the number of consumers is small and patterns of consumption are not stable.

Do these considerations undermine the value of all the conclusions produced? They do not. We recommend that evaluation of addiction-prevention measures should entail reference to basic research and should include measurement of change in → risk factors and protection factors proven to be predictors for subsequent abuse and dependency. Consumption at an early age – the outcome variable used in this report – is certainly one of the key risk factors but it is not the only one (Petraitis *et al.* 1998). Basic research is therefore also required to identify the most important predictors or configurations of predictors and to make these available to prevention researchers for use as criteria of success. This would mean that measures based in different fields of intervention could be directed at different key factors in order to ensure success with an approach involving various combinations of behavioural and circumstantial prevention.

5.4 Stock-taking of prevention research and practice and the tasks they face in Germany

Prevention programmes need to be introduced in phases that build upon one another. It is intended that the next steps in research and practice in the German-speaking countries will follow the six-phase model formulated by Uhl (1998).

Phase 1: basic research

Basic scientific research is the foundation on which prevention programmes are developed. It entails, *inter alia*, recording epidemiological data in order to identify problem areas and trends in consumption; formulating theories that explain the evolution of consumption, abuse and dependency; and developing valid and reliable instruments for measuring abusive behaviour and other relevant variables. In our view,

a missing element here is a standard approach to the definition of substance abuse among children and young people. It is possible to borrow from international work on the subject (e.g. Newcomb and Bentler 1989 or Hays and Ellickson 1996) but, because such a definition will be heavily influenced by cultural context, we need to formulate a standard assessment of use and abuse by people in this age group in our own culture.

Phase 2: prevention research

Building on the basic research, prevention research formulates and explores causal models in relation to influences on consumption uptake, change and reduction in consumption patterns and the termination of consumption within specific target groups (a process referred to as intervention modelling). Part of that process involves research into risk factors and prevention factors and the next task in this regard is to identify key predictors or configurations of predictors for avoidance of substance abuse. A closely associated requirement here is theory-based consensus on acceptable and meaningful criteria for the success of prevention. Some measures – the alternatives-based approach, for example, or legal age restrictions on consumption – are not based on intervention modelling, in other words there is no theory-based conception of why the measures should be effective. It is only through use of intervention modelling that measures can be improved.

Phases 3 and 4: design and development

The next phases involve the design and development of specific measures. In our view, family-orientated addiction prevention and measures that address leisure as a system are in the early stage of conceptual development, in other words there is still a need in most cases for the design and formulation of theory-based measures, which will then require testing in pilot studies and further development.

Successful examples from North America can provide guidance (e.g. Spoth *et al.* 1999) and assist the development of culturally appropriate family-orientated procedures for a European, and specifically a German, context. Training programmes for parents and children have been used successfully in Germany for some time already in the prevention of behavioural disorders (Kuschel *et al.* 2000 and Lösel *et al.* 2004). Peer projects, such as those offered on a cooperative basis by the Federal Centre for Health Education (www.peer-projekt.de/index.php and www.bist-du-staerker-als-alkohol.de), have undergone initial pilot evaluation (Kröger and Schmid 2002), which can potentially inform their future development.

Most of the selective measures for groups such as children of addicts, or young ethnic German emigrants from East European states (*Spätaussiedler*), are also in phases 3 and 4. Many counselling centres are already active in this field: concepts have been developed and measures are being implemented. In some cases, accompanying research seeks to explore the feasibility, effectiveness or potential side effects of the measures (e.g. Bühler and Maiwald 2004a and Bühler and Maiwald 2004b). It is, however, too early to draw evidence-based conclusions.

Community-based prevention in Germany is at a similar stage. The addiction-prevention competition initiated by the Federal Centre for Health Education

(www.kommunalesuchtpraevention.de) has brought to light numerous collaborative, cross-system projects in German cities and municipalities. Workable concepts have thus developed from practice, and the next essential step would seem to be their further development on the basis of evidence. We are aware only of isolated pilot studies in this particular area (e.g. Hollederer 2001).

Phase 5: review

Without a doubt the programmes that have progressed furthest are the life-skills measures which are based in schools but address individuals. They have already developed to the review stage, which should involve assessment of their feasibility, effectiveness and negative consequences on a large scale and under controlled (experimental or quasi-experimental) conditions. Many programmes have been reviewed for effectiveness more than once, using different sample groups (see Bühler and Heppekausen 2005). Although an indication of the effectiveness of these programmes is thus available, the findings are too inconsistent and further improvement seems to be required. It is the task of research here to identify the useful elements in the programmes in question. This can be done by analysing functional processes (using mediation analysis or experimental testing of programme components), with a view to improving the intervention model developed in Phase 2. The next important step in this regard should be a more focused review of group processes in the course of the programme, which will shed more light on the success of interactive methods (see the sections on school-based intervention) and contribute to further optimisation of behavioural measures. Seeking to identify factors that moderate success (i.e. asking the question ‘For which personality profiles are programmes effective or ineffective?’) may also yield useful indications for improvement of this universal approach. Results from the small number of studies conducted in this area to date are inconsistent (Leppin *et al.* 1999; Heppekausen 2004).

There is also evidence about isolated selective approaches in the review phase. One such measure is concerned with early recognition of, and intervention with, drug consumers identified through road-traffic incidents (Görgens and Rometsch 2004). Another extensive evaluation study focuses on community-based intervention with young people at risk of addiction (Meili 2003). The latter is probably the highest-quality study in the field to date. As outlined above, however, the great majority of selective measures are still in the development phase.

Phase 6: routine implementation

This is the final phase in the research-based introduction of preventive measures. It is reached when a programme has been introduced by a wide circle of users on a routine basis. Quality control is an element of this phase. School-based intervention includes isolated efforts at quality assurance, inasmuch as training is offered and supervision of programmes is ensured (see Bühler and Heppekausen 2005). Before other tasks can be undertaken in this phase, however, work is required on two crucial prerequisites: a) the transfer of evidence-based prevention measures into practice; and b) their establishment on a firm footing. In the absence of a representative survey of the work of prevention agencies, it is not possible to draw conclusions about the degree to which

addiction-prevention activities in Germany are evidence based or at least grounded in research. It is not unlikely, however, that the situation is similar to that in the USA, where a comparison of current practice in school-based prevention with evidence-based recommendations revealed that, although recommended content was quite often being transmitted, the transmission methods were ineffective, and that it was rare for both content and methods to reflect the recommendations (Ennett *et al.* 2003). In our view, however, ‘transfer’ should not be a matter of forcing into practice model projects developed in the research phase. Instead, the aim, from the design phase onwards, should be to achieve cooperation between research and practice. Not only could funding for practice be made contingent on the use of evidence-based measures, but research funding could be dependent on cooperation with practitioners.

At first glance it seems hard to describe the development and implementation of legislative and regulatory measures in terms of phases, although achieving the best possible level of addiction prevention would demand a phased approach here too. In the case of legislation as an instrument of addiction prevention, the intermediate phases of development and experimental review are difficult to apply, with the result that implementation means moving directly from design to routine implementation.

To conclude this ‘stock-taking’ we should look at least some way beyond the psychosocial and structural horizons of addiction prevention. As techniques in the neurological sciences develop at a remarkable rate, these fields of knowledge are increasingly contributing to explanations of how addiction develops and how it is sustained. Thürauf *et al.* (2004) have reviewed the findings here in relation to nicotine dependency. The key mechanisms which they cite are sensitisation of central reinforcing systems, conditioning processes and the learning of habits, with differences reported in respect of different substances. While we cannot consider here the individual neurobiological processes involved, it should be noted that preventive measures are also being developed with reference to this strand of research. Scientists are exploring, for example, the possibility of immunisation against nicotine dependency. Ultimately this works by creating nicotine-antibody complexes too big to pass through the blood-brain barrier, so that the pleasurable neurophysiological effects of nicotine are blocked and the physiological processes of dependency are prevented (Thürauf *et al.* 2004).

To summarise, it is clear that research into the prevention of substance-related disorders has generated a considerable body of knowledge in recent years and that, although this knowledge is of practical relevance, it needs to be transferred into practice much more widely than has been the case to date. There ought to be a special focus, in this regard, on concepts with a long-term orientation that combine behavioural and circumstantial prevention measures designed for the various settings in which children and young people live. There is also a need for much more intensive prevention research in Europe, with a particular focus on research that both develops and is informed by theory, as well as the analysis of functional processes (looking at mediator and moderator variables) in successful addiction prevention.

6. PROSPECTS FOR PREVENTION PRACTICE IN GERMAN- SPEAKING COUNTRIES, WITH A FOCUS ON ACTION

Clearly, much work remains to be done in addiction-prevention research and practice in the German-speaking countries. In Section 5.4 we attempted a comprehensive stock-taking; in what follows we set out the next steps that we consider necessary, with an emphasis on action, interlacing our arguments with examples of best practice and recent new thinking in the field of addiction prevention.

Family-based intervention: time for development and testing

The highly promising findings from certain comprehensive measures undertaken in the USA and the UK and from parental training in the context of behavioural-disorder prevention in German-speaking countries ought to encourage the development and testing of family-orientated measures. A practical procedural model for such measures might be the Iowa Strengthening Families Program (ISFP), which targets young people and their parents and aims to reinforce unspecific and specific protection factors in the family context and to diminish corresponding risk factors with a view to preventing alcohol abuse. Over a seven-week period up to eight families come together in weekly sessions lasting two hours. In the first hour, parents and young people meet as two separate groups. The young people receive training in personal and social skills, including communication and social interaction, how to cope with emotions and stress, and resilience in relation to offers of substance consumption. At the same time the parents' group receives training in parenting skills.

In the second half of each session the families come together again to work jointly on problem-solving and communication skills and to engage in activities aimed at promoting family cohesion. This process is capable of producing short-term and long-term effects on young people's consumption of alcohol (Spath *et al.* 1999). In response to the objection that it is difficult to reach families as a target group, there is now experience-based evidence of ways in which families can be motivated to participate. Although they are both time intensive and resource intensive, the methods work (they include offering childcare and transport, making initial personal contact, offering telephone reminders and home calls, reimbursing financial outlay, providing a shared meal and implementing family-therapy motivation strategies).

School-based intervention: using and optimising what is available and focusing on the entire system

To an extent not found in virtually any of the other fields, practitioners of school-based prevention can refer to numerous evidence-based and practicable measures from German-speaking countries (Bühler and Heppekausen 2005). The relevant programmes now need to be carried through in schools and firmly established there. Programmes focusing on individuals need to be further developed, in close cooperation between practitioners and researchers, because their potential for addiction prevention has not yet been used to the full. The practical possibilities are demonstrated by two examples, one of which was specifically designed for addiction prevention, while the other is wider ranging and addresses additional problem areas.

1. The school-based programme known as ALF ('Allgemeine Lebenskompetenzen und Fertigkeiten' ['General Life Skills']) (Walden *et al.* 1998; 2000) is a substance-specific form of intervention. Designed for schoolchildren aged 10 to 12, it aims to reinforce unspecific and specific protection factors and thus to prevent abuse of tobacco and alcohol. It consists of a total of twenty 90-minute teaching sessions. Twelve of the sessions are carried out with 10-year-olds and eight with 11-year-olds. The ALF sessions are incorporated into the normal school day and are taken by teachers. The programme content is delivered in ways appropriate to the pupils' age, using a range of methods including role play, group discussion, work in small groups and in pairs, quiet work and homework. In addition to practical information about cigarettes and alcohol, and exercises in resilience development, the series of lessons involves non-substance-specific exercises that explore self perception, empathy, critical thinking and decision making, problem solving, communication, social relationships and relaxation. Evaluative studies show that ALF can be integrated into the ordinary school curriculum and that it is positively received by pupils, teachers and parents (Kröger *et al.* 1998). During the period in which the research was carried out, uptake of cigarette and alcohol abuse was delayed (Kröger *et al.* 1999; Kröger and Reese 2000). There was also evidence that the programme successfully promoted life skills and helped the young people to cope with growing up (Bühler 2004).
2. The 'Eigenständig werden' ['Becoming Independent'] school programme (Atherton *et al.* 2002) aims to promote general health and personality development: it includes not only problem-specific content relevant to addiction prevention but also lesson components on the theme of violence prevention. The programme materials currently available are for use with elementary-school children. Materials for pupils in the 10 to 11 age band are in preparation. The programme can be taken by teachers once they have received preparatory training. It is recommended that approximately 10 of the programme's lesson units are delivered in each academic year, with the precise scheduling left to the teachers in charge. In the first two years, subjects covered include not only personal and social skills but also themes such as personal hygiene, protection of the environment and how to cope with dangers and accidents. Specific content aimed at preventing addiction and violence is introduced from the third year of the programme at elementary-school level. Interactive methods are used including role play, work in small groups and discussion circles. The programme was run for the first time on a pilot basis in the 1998-1999 school year and was evaluated with regard to ease of implementation and acceptance (Wiborg and Hanewinkel 2001). An effectiveness study has not yet been completed.

As discussed above, school can be the setting not only for measures that focus on the individual but also for other elements of addiction prevention that address school as a system (looking at classes, teachers, teaching methods and how the school is organised). The BZgA guideline document *Auf dem Weg zur rauchfreien Schule* ['Towards a no-smoking school'] (BZgA 2003) is a good example of this approach. It provides for measures at school level (e.g. a smoking ban and an associated system of

discipline); at class level (e.g. prevention programmes); and at individual level (e.g. reflection sessions for smokers) and describes how the school can move towards becoming smoke free, adopting a democratic approach from the outset and gaining majority acceptance for the change.

Intervention in the world of leisure and friends: time for evaluation and creativity

Given the important influence of peers on the individual's substance consumption, there is a need to research and adjust existing measures based in the world of leisure (which, however they may be entitled, are not normally addiction specific) with regard to their effectiveness in addiction prevention. Peer-education measures (such as www.bist-du-staerker-als-alkohol.de) should be evaluated, and approaches of proven effectiveness, such as mentoring programmes, should be tried out. An example of the latter is the 'Big Brothers Big Sisters' initiative, a long-standing and widely implemented US mentoring programme for children and young people aged 5 to 18 (Grossman und Tierney 1998). The mentors used are adults who are prepared to spend time in activities with a child or young person once a week for at least a year. The contact may take place in a private context during leisure time, with a free choice of activities, or else a meeting place, such as school, may be agreed. The programme is particularly directed at children in need (children of single mothers, for example) who may benefit, as they develop, from the attention of an additional adult to whom they can relate. The children's or young people's participation is arranged through parents, teachers or other responsible adults, and is contingent on parental agreement. Local agencies select the mentors, test them for aptitude and provide training and support; they initiate the contact between mentor and child and supervise their further meetings. An effectiveness study (Tierney *et al.* 1995) identified positive effects from the intervention: measured against a control, fewer programme participants began to consume alcohol and drugs over the period of the intervention. The participants also reported a lower level of aggressive behaviour, missed less time at school, had improved academic performance and reported improved relationships with parents and friends.

A fresh theoretical approach could pave the way for developing different types of leisure-based intervention. In contrast to previous theoretical conceptions of addiction prevention, the 'Positive Youth Development and Empowerment' approach pursues the goal not of problem-free youth but rather of 'well-prepared' youth (Kim *et al.* 1998). The ideas here are based on five theories: the theory of social control, social development theory, the theory of problem behaviour, social cognitive theory (see Section 2) and expectations-state theory (Foschi *et al.* 1985, quoted by Kim *et al.* 1998). The last-named theory postulates that our self image and behaviour reflects the image that others have of us and the way that they treat us. The image that others have of us is, in turn, largely conditioned by their prior expectations of us. If, for example, young people are told that they cause problems, this tends to be reflected in their own image of themselves and consequently in their behaviour. If they are given to understand that they are valuable members of society, then they are more likely to see themselves in that light and to become involved in responsible projects.

There are eight components in the empowerment process, all of which need to be realised in order for the process to be effective. Young people need sufficient family support and social support, and that must be accompanied by high expectations of them. At the same time they must have a range of possibilities – in school, in the family, in the community and in society – for learning life skills, including career-related skills; for exercising responsibility; and for becoming involved in and contributing to processes in civil society. Lastly they need a (public) context in which to demonstrate their abilities and achievements so that significant people in school, the family and society have an opportunity to recognise what they have accomplished and to reinforce their efforts.

Media-based intervention: to be used as part of a package

The view that media campaigns should be accompanying components of addiction prevention, rather than stand-alone measures, is gaining increasingly general acceptance. A study by Flynn and Kollegen (1995) describes an example of school-based and media-based intervention being combined successfully. A school-based prevention programme, based on the concept of social influence, was married with a four-year-long TV and radio campaign. The mass-media input consisted of brief (30 to 60-second) advertisements with an educational content that reflected the content of the school-based programme. Over the period of the intervention some 540 television advertisements and 350 radio advertisements were transmitted annually. In their intervention study the researchers compare pupils (in the 10 to 12 age range) from different communities, who were exposed to either the school-based programme in combination with the media campaign or simply to the school-based programme. At the end of the intervention the proportion of smokers among the pupils who had experienced the additional input of the media campaign was 40% lower than in the group not exposed to the media influence. The additional media influence was also reported to produce more positive effects on tobacco-related variables such as attitudes to smoking and notions of standards in relation to it. The media campaign proved particularly effective for the high-risk group of pupils who had already smoked prior to the intervention and had two or more smokers in their immediate social circle (Flynn *et al.* 1997).

The Internet should be mentioned here as a relatively new medium in addiction prevention. Internet platforms (e.g. www.drugcom.de and www.aktionglaskar.de) provide information about the way that substances work, enable people to review their own consumption behaviour and to make individual risk assessments, and supply information about sources of help. The attractive nature of websites and the fact they can be used on a personal, interactive basis give them advantages over brochures and posters.

Community-based intervention: evaluation needed

The addiction-prevention competition initiated by the Federal Centre for Health Education (www.kommunalesuchtpraevention.de) has brought to light numerous collaborative, cross-system projects in German cities and municipalities. Workable

concepts have thus developed from practice, and the next essential step would seem to be their further development on the basis of evidence.

The examples described below were winners of the 2003-2004 competition. The jury's criteria included networking among the various agencies involved, linkage between structural and communication measures, geographical extent of coverage, long-term nature of strategies and measures, proof of effectiveness, involvement of the group targeted by the prevention measures, the gender-specific nature of the approach and the importance of projects being rooted in local government at management level. In the district of Esslingen an addiction-prevention action network has been developed over more than a decade: it involves more than 150 facilities and has over 260 members. Addiction prevention officers coordinate a joined-up approach to prevention work and supervise the development and implementation of the relevant measures. Specialist groups – comprising representatives of different institutions and professions, who meet on a regular basis – work to develop practical events, measures and projects. There are specialist groups for addiction prevention among children, at school, in youth work, among elderly people, on the street and at work. Members of the public are kept informed about the work through press releases, brochures and other materials (e.g. posters and project outlines).

Another example, this time of a community anti-smoking effort, is the 'Augsburg rauchfrei' ['No smoking in Augsburg'] initiative. This concept is the responsibility of the addiction-prevention centre within Augsburg's municipal department of health. The initiative involves coordination and networking of measures to prevent people from starting smoking, to promote quitting and to protect non-smokers. Intervention takes place in schools and the workplace (with the aim of achieving smoke-free zones), among the public (with advice and help to quit on offer, as well as the creation of no-smoking areas) and through the healthcare system (promoting smoke-free pregnancy and parenthood as well as projects in medical practices). The Internet is used as a platform for communication about the initiative (www.augsburg.de).

Legislative and regulatory intervention: sending out a signal

The particular advantage of legislative measures is their widespread impact. Without measures in this field, the public generally would scarcely feel the impact of addiction-prevention efforts.

The four increases in rates of duty on tobacco in Germany in the years 2002, 2003 and 2004 pushed up the price of a packet of cigarettes by, respectively, 19%, 20%, 40% and again 40% (Hanewinkel and Isensee 2005). In representative surveys conducted after each price rise, respectively 4.7%, 4%, 7.9% and 7.5% of respondents reported that they had quit smoking because of the price rise (Hanewinkel and Isensee 2005). Although these results are not as conclusive as those of controlled trials, they confirm international findings about the effectiveness of price increases in influencing smoking behaviour among young as well as older people (Isensee and Hanewinkel 2004).

No empirically based conclusions can be drawn about other legislative measures in Germany, although there is scope for speculative discussion. Training for sales staff,

intended to prevent the sale of tobacco to underage customers, would probably be no more effective in Germany than elsewhere. In Germany in particular it is easy for young people to side-step the law (namely the Jugendschutzgesetz or Youth Protection Act) that imposes an age restriction on consumption of legal substances, because cigarettes are always available from vending machines. It is debatable whether the finding in the USA that raising the minimum drinking age has preventive effects can be transposed to the German context. As a reason for non-consumption, the fact of breaking the law is not a prime consideration among young Germans (BZgA 1998).

Although it is not yet possible to make evidence-based recommendations concerning the preventive effect on substance consumption of the majority of legislative measures in Germany, we believe it is essential to eliminate cigarette vending machines, to make clear provisions on age limits in the Youth Protection Act and to ban tobacco advertising. The purposes of these measures would be: a) to counter the accusation by young people that prevention efforts are hypocritical and not serious in their intention; and b) to enable credibility to be sustained. Even the most effective measure will be pointless if those who implement lack credibility.

To summarise, research into the prevention of substance-related disorders in recent years has generated a considerable body of knowledge which is certainly relevant but which needs to be transferred into practice much more widely than has been the case to date. The main focus should be on long-term, integrated concepts for behavioural and circumstantial prevention, taking account of the environment in which children and young people live. The effective prevention of addiction depends on a targeted approach informed by the results of relevant research.

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8. ARTICLES REFERRED TO FOR CONCLUSIONS ON EFFECTIVENESS

1 Lochman, J. E., van den Steenhoven, A. (2002), 'Family-based approaches to substance abuse prevention', *Journal of primary prevention*, 23 (1), 114-149

Type of article: unsystematic → review (U), rated as a systematic → review (S)

2 Loveland-Cherry, C. J. (2000), 'Family interventions to prevent substance abuse: children and adolescents', *Annual review of nursing research*, 18, 195-218

Type of article: systematic → review (S)

3 Hall, N. W., Zigler, E. (1997), 'Drug-abuse prevention efforts for young children: a review and critique of existing programs', *The American journal of orthopsychiatry*, 67 (1), 134-143

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5 Dusenbury, L. (2000), 'Family-based drug abuse prevention programs: a review', *Journal of primary prevention*, 20 (4), 337-352

Type of article: unsystematic → review (U)

6 Tobler, N. S., Roona, M. R., Ochshorn, P., Marshall, D. G., Streke, A. V., Stackpole, K. M. (2000), 'School-based adolescent drug prevention programs: 1998 meta-analysis', *Journal of primary prevention*, 20 (4), 275-336

Type of article: → meta-analysis (M)

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Type of article: → meta-analysis (M)

9 Flay, B. R. (2000), 'Approaches to substance use prevention utilizing school curriculum plus social environment change', *Addictive Behaviors*, 25 (6), 861-885

Type of article: unsystematic → review (U)

10 Maiwald, E., Reese, A. (2000), 'Effektivität suchtpräventiver Lebenskompetenzprogramme – Ergebnisse deutscher Evaluationsstudien', *Sucht Aktuell*, 1, 8-12

Type of article: unsystematic → review (U)

11 Thomas, R. (2003), 'School-based programmes for preventing smoking', (Cochrane review) in *The Cochrane library*, Issue 4, John Wiley and Sons Ltd, Chichester, UK

Type of article: systematic → review (S)

12 Rooney, B. L., Murray, D. M. (1996), 'A meta-analysis of smoking prevention programs after adjustment for errors in the unit of analysis' *Health education quarterly*, 23, 48-64

Type of article: → meta-analysis (M)

13 Sussman, S., Lichtman, K., Ritt, A., Pallonen, U. E. (1999), 'Effects of thirty-four adolescent tobacco use cessation and prevention trials on regular users of tobacco products', *Substance use and misuse*, 34 (11), 1469-1503

Type of article: unsystematic → review (U)

14 Skara, S., Sussman, S. (2003), 'A review of 25 long-term adolescent tobacco and other drug use prevention program evaluations', *Preventive medicine*, 37 (5), 451-474

Type of article: systematic → review (S)

15 Lloyd, C., Joyce, R., Hurry, J., Asthon, M. (2000), 'The effectiveness of primary-school drug education', *Drugs: education, prevention and policy*, 7 (2), 109-126

Type of article: unsystematic → review (U)

16 Gottfredson, D. C., Wilson, D. B. (2003), 'Characteristics of effective school-based substance abuse prevention', *Preventive science*, 4 (1), 27-38

Type of article: → meta-analysis (M)

17 Wilson, D. B., Gottfredson, D. C., Najaka, S. S. (2001), 'School-based prevention of problem behaviours: a meta-analysis', *Journal of quantitative criminology*, 17 (3), 247-272

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18 Shin, H. S. (2001), 'Review of school-based drug-prevention program evaluation in the 1990s', *American journal of health education*, 32 (3), 139-147

Type of article: systematic → review

19 Cuijpers, P. (2002), 'Effective ingredients of school-based drug prevention programs. A systematic review', *Addictive behaviors*, 27 (6), 1009-1023

Type of article: systematic → review (S)

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9. GLOSSARY

best-practice survey

- ❖ A survey of the effectiveness of optimal preventive measures
- ❖ Does not lend itself to generalising conclusions about the average effectiveness of preventive measures

CG *See* control group

clinical criteria for abuse and dependency (DSM, APA, 1994)

- ❖ Abuse requires the presence of at least one of the following criteria: significant problems at home, in the family or at school as a result of substance use; substance use in dangerous situations or problems with the law as a result of substance use; social and interpersonal problems as a result of substance use.
- ❖ Dependency requires the presence of at least three of the following criteria: development of tolerance and withdrawal symptoms; more prolonged or heavier consumption than intended; unsuccessful attempts at control; a high amount of time spent in procuring and using the substance and recovering from use; restriction of activities; continued use despite harmful consequences.

control group (CG)

- ❖ Group that does not participate in the preventive measure and is compared with the treatment group – may also be termed the ‘comparative group’

controlled trial (CT)

- ❖ Termed ‘controlled’ because the results in the treatment group are compared with those in the control group (a reference-value group) which does not experience the intervention

CT *See* controlled trial

DSM-IV

- ❖ Abbreviation for Diagnostic and Statistical Manual of Mental Disorders – a classification system for categorising and diagnosing mental disorders, published by the American Psychiatric Association. The (current) 4th edition has been available in German since 1996.

effect size

- ❖ Quantitative difference between treatment group and control group
- ❖ Difference in mean outcomes for treatment group and control group, standardised by population distribution (Hedges d)
- ❖ Effect sizes up to .2 are considered ‘small’, up to .5 ‘medium’, and up to .8 large.
- ❖ Can be interpreted as the absolute percentage difference in distribution of consumers between the treatment and control groups (differential success rate, Rosenthal and Rubin, 1982). In the absence of any effect the distribution would be 50:50.

evidence basing

- ❖ Empirical underpinning

expert survey

- ❖ Survey of the effectiveness of preventive measures, based on interviews with experts or the conclusions of an expert, rather than individual studies

general addiction prevention

- ❖ Addiction prevention which targets a number of substances (normally tobacco, alcohol and cannabis), rather than focusing on just one

high-quality individual studies

- ❖ Characterised by convincing research design, ensuring that differences in behaviour between treatment and control groups can actually be ascribed to the effectiveness of the preventive measure, ruling out in so far as possible other potential explanations
- ❖ High-quality studies involve comparison between a treated and an untreated group, preferably with persons distributed between the two groups on a random basis (see → randomisation). This is what happens in randomised controlled trials (see → RCT) and controlled trials without randomisation (*see* CT). Data is then gathered from the groups at least before and after the treatment and preferably also at a later date.
- ❖ Where it is not possible to compare two groups, an interrupted time series (see → IST) is an alternative. Here data is collected from a group at a particular time; there then follows a time interval without treatment, which ends with collection of the same data; thereafter follows a time interval with treatment, which again ends with the same data collection. This enables comparisons of behavioural development, with and without treatment, to be drawn in respect of the same people.

high-quality reviews

- ❖ Characterised by systematic identification and selection of individual studies, transparency in the search and selection procedure, the quality of the individual studies, rigorous evaluation of results and compelling conclusions
- ❖ Appear, in so far as possible, in peer-reviewed journals
- ❖ Examples include meta-analyses and systematic reviews.

ICD-10

- ❖ Abbreviation for International Statistical Classification of Diseases and Related Health Problems – a diagnostic classification system published by the World Health Organisation (WHO). Currently available in its 10th revised version.

intention-to-treat analysis

- ❖ This determines the number of participants who need to be treated in order to achieve one successfully treated person – the so-called Number Needed to Treat

(NNT). For example, an NNT of nine means that for every nine people treated one person reports that treatment has been successful. The calculation is based on the total number of people originally part of the group, even if not all of them experience the intervention in its entirety.

interrupted time series (ITS)

- ❖ A study in which periodical measurements are made before, during and after an intervention or experimental treatment in order to derive conclusions about the effects of the intervention

intra-class correlation

- ❖ Describes the possibility that individuals within one group or class bear a closer resemblance to one another than to individuals of different groups or classes
- ❖ Poses a problem when the level of ‘randomised’ allocation to treatment or control group (for example allocation by class or school) is not that applied at the evaluation stage (for example, evaluation on an individual basis) because it could lead to distortion in assessing the statistical significance of a difference and thus to erroneous evaluation of the possible effect of the intervention, i.e. the difference in the outcome variable between TG and CG

ITS *See* interrupted time series

mediation studies

- ❖ Mediation studies examine why measures are successful and specifically whether their success is due to the influence of mediating variables.

meta-analysis

- ❖ Review including quantitative conclusions (in terms of → effect size) about the effectiveness of measures
- ❖ Quantitative summary of the results of numerous studies according to predetermined statistical procedures
- ❖ Considered the most compelling methodological procedure for generating evidence-based conclusions
- ❖ *See also* high-quality review

odds ratio

- ❖ Quantifies the probability of being a non-consumer, rather than a consumer, as a result of participation in a preventive measure as opposed to non-participation (below 1 the probability is less; above 1 it is greater)
- ❖ A logistical-regression outcome parameter that predicts the outcome in relation to a criterion variable (in this case the variable is ‘consumption’ and the options are ‘consumer’ or ‘non-consumer’) using predictor variables (the variable here is ‘group’ and the options are →treatment group or → control group)
- ❖ Expresses in numerical terms the ratio of probability of a particular outcome in relation to a criterion variable (e.g. being a consumer), on the basis of

characterisation using a predictor variable (e.g. being a member of the → TG and not the → CG). If the odds ratio is .66 it means that the probability, as a member of the TG rather than the CG, of being a consumer is reduced by a factor of .66. If the odds ratio is 1.50 it means the probability is increased by a factor of 1.5.

percentage difference, absolute

- ❖ Difference between the percentages of consumers in the treatment and control groups. For example, where 10% of people in the → TG are smokers and 15% of those in the → CG are smokers, there is an absolute percentage difference of 5%.

percentage difference, relative

- ❖ Relative proportion of consumers in the TG, compared with the percentage in the CG. For example, where 10% of people in the → TG are smokers and 15% of those in the → CG are smokers, there is a relative percentage difference of 30%.

preventive effects on consumption behaviour

- ❖ The outcome variables in this report are → preventive effects on consumption behaviour. This term covers the prevention, delay or reduction of consumption.

price elasticity

- ❖ Change in consumption with a 1% increase in price. For example, a value of -0.5 means that a 1% increase in price will produce a reduction in consumption of 0.5% or that a 10% increase in price will reduce consumption by 5%.

randomisation

- ❖ Randomisation means distribution according to the principle of randomness. It largely enables prejudice, unconscious or otherwise, on the part of the researcher to be discounted in the distribution process, and ensures that the spread of known and unknown influencing factors across all groups is as even as possible. To achieve this there must be a sufficiently large number of research subjects. The study must indicate the form of randomisation used and how it was implemented. All randomised trials are also controlled trials.

randomised controlled trial (RCT)

- ❖ The randomised controlled trial (RCT) has proved itself as the optimal form of research design for obtaining an unambiguous conclusion in response to an unambiguous question. It is thus sometimes referred to as the ‘gold standard’ in research planning.

RCT *See* randomised controlled trial

review

- ❖ An overview, with qualitative conclusions on the effectiveness of measures.
- ❖ A qualitative summary of the results of numerous individual studies according to more or less cogent, non-statistical procedures

- ❖ *See also* high-quality review
- ❖ **systematic review:** where the search and selection procedure for individual studies is such that every available individual study might have been included in the review
- ❖ **unsystematic review:** where it is not clear from the search and selection procedure for individual studies that every available individual study might have been included in the review

risk factors and protection factors

- ❖ Risk factors and protection factors are factors that influence substance consumption. Risk factors are associated with increased likelihood of substance consumption. Where risk factors are present, the simultaneous presence of protection factors means that the likelihood of substance consumption is mitigated. For example, the effect of the risk factor ‘parental separation’ on subsequent substance consumption could be mitigated by the protection factor ‘good inter-sibling bonding’.

TG *See* treatment group

treatment group (TG)

- ❖ Group that participates in the preventive measure – may also be termed the ‘intervention group’