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## Preventing Adolescent Alcohol Use: Processes and Outcomes of a Community-Based Intervention in Trelleborg

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*Preventing Adolescent Alcohol Use*  
—  
*Processes and Outcomes of a  
Community-Based Intervention in Trelleborg*

Martin Stafström



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## ABSTRACT

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The aim of this thesis is to investigate the potential of applying a community-based intervention, implemented in the Swedish city of Trelleborg 1999-2002, to reduce adolescent alcohol use. In order to do so, we had four specific aims. First, we studied the processes, both in terms of action and institutionalization, within the intervention. This would improve our understanding of the quantitative analyses. Second, we investigated the effects of the intervention, based on a number of indicators related to the intervention objectives. Third, we investigated which risk factors were significant for adolescent alcohol use in Trelleborg. Fourth, we examined whether the changes of the intervention's target indicators resulted in less alcohol-related accidents and violence among the Trelleborg youth.

In the process evaluation (Paper I), we carried out a qualitative data analysis, applying an iterative explanation-building process, using interviews, public records, meeting minutes and evaluation seminars. In Papers II-IV, we analyzed school survey data, applying logistic regression modelling and other statistical analyses.

The process evaluation showed that the community intervention did not adequately institutionalize alcohol and drug prevention within the city administration, mainly due to numerous un-planned events and that the structure was individual oriented. Nevertheless, the community mobilization and the raise in public awareness regarding the alcohol issue are factors which could have contributed to the impact of the project.

The effect evaluation (Papers II-IV) showed that the community-based intervention in Trelleborg is likely to have contributed to a reduction in adolescent alcohol consumption. When comparing the data, for a population 15 and 16 years old, from the first school survey in 1999 with the one carried out in 2003, there is a decrease in the proportion of alcohol consumers (decreased by 21.8%), monthly heavy episodic drinking (38.2%), excessive drinking (36.3%), alcohol-related accidents (38.5%), and alcohol-related violence (50.0%). The data analyses show that these changes are independent of significant factors on community, group and individual level. Availability of alcohol was also reduced in the target group during the intervention, but this change was not sustained after the project completion. In addition, the analyses supported the hypothesis that the decrease in alcohol-related accidents and violence was related to the reduction in adolescent alcohol consumption.

The findings in the thesis support the assumption that by implementing a city policy program, including a plan of action, a municipality can reduce adolescent alcohol use, and subsequently alcohol-related harm. However, in order to institutionalize the interventions and the alcohol issue there has to be a balance of internal and external input throughout the project. It seems that the implementation process in terms of institutionalization and the effects of the intervention do not have to be correlated, i.e., a weak institutionalization does not necessarily result in weak effects.

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**Keywords** Community-based intervention, alcohol prevention, adolescents, process evaluation, effect evaluation, institutionalization, alcohol-related accidents and violence

## LIST OF ORIGINAL PAPERS

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This thesis is based on the following publications, and they will be referred to by their Roman numerals.

- I. Stafström, M. & Larsson, S. The Trelleborg Project: a Process Evaluation of a Multi-Sector Community Intervention to Reduce Alcohol Consumption and Related Harm (Submitted).
- II. Stafström, M., Östergren, P-O., Larsson, S., Lindgren, B. & Lundborg, P. (2006). A community action programme for reducing harmful drinking behavior among adolescents: the Trelleborg Project. *Addiction*, 101:813-823.
- III. Stafström, M., Östergren, P-O. & Larsson, S. (2005). Risk factors for frequent high alcohol consumption among Swedish secondary-school students. *Journal of Studies on Alcohol*, 66:776-783.
- IV. Stafström, M. & Östergren, P-O. A community-based intervention to reduce alcohol-related accidents and violence in 9<sup>th</sup> grade students in southern Sweden: the example of the Trelleborg Project (Submitted).

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## INTRODUCTION

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Alcohol drinking has been, and still is, a major health threat in Sweden. According to the WHO, it is the fourth most common reason for DALYs lost in Western Europe (WHO, 2004 and Rehm *et al.*, 2006). The reason why the effects of alcohol drinking have such a strong impact on health outcomes is that they influence a wide range of health related problems. These may be both acute – e.g. falls, road traffic accidents, sexual assaults, suicides, homicides, and other violent injuries (e.g. Cherpitel, 1993, Seymour & Oliver, 1999, Kingma, 2000, and Cherpitel *et al.*, 2005) – and chronic, e.g. liver cirrhosis, pancreatitis, and psychoses (e.g. Lelbach, 1975, Lowenfels *et al.*, 1993, McGinnis & Foege, 1993, and Bijl *et al.*, 1998).

Alcohol consumption also represents a large share of societal costs. Based on a review of existing studies, the total *tangible* cost of alcohol in the EU area was, in 2003, estimated to be €125 billions, equivalent to 1.3% of the GDP. The *intangible* costs represent the value people place on pain, suffering and lost life that occurs due to the criminal, social and health harms caused by alcohol. In 2003, these were estimated to be €270 billions (Anderson & Baumberg, 2006).

Research shows that more than 90% of Europe's 15-16 year olds are alcohol consumers. In addition, the average onset age for first intoxication is about 14 years of age (Currie *et al.* 2000). ESPAD (European School

Survey Project on Alcohol and other Drugs), a pan-European survey conducted every three years, has found that the highest levels of both binge drinking and drunkenness are found in the Nordic countries, UK, Ireland, Slovenia and Latvia (Hibell *et al.*, 2004).

Alcohol problems are a result of factors on three different levels; structural, group or social interaction, and individual. On the structural level, one finds, e.g., the cultural and symbolic value of intoxication (Heath, 1983), which also may be attributed to gender (Simpura & Karlsson, 2001). In addition, the level of attention that is given to alcohol drinking within legislation and policy making, e.g. regulating availability, is also a determinant (Edwards *et al.*, 1994 and Babor *et al.*, 2003). Social interaction between individuals may promote or prevent alcohol drinking. This may be a result of clustering, where individuals who share the same interests and values seek each other's company (Jessor & Jessor, 1977). Another important factor for the impact of the group level is social learning (Bandura, 1977). On the individual level, it has been shown that certain psychological characteristics are risk factors for alcoholism and harmful drinking patterns (Hawkins *et al.*, 1992), such as sensation seeking behavior (Spear, 2000).

Of these three levels, interventions on the structural level have been shown to be the most effective ones,

when the aim is to prevent alcohol related harm and alcoholism within a society (Edwards *et al.*, 1994 and Babor *et al.*, 2003). Positive results are mainly achieved by controlling the physical availability of alcoholic beverages; the place, the time (opening hours), the price or the legal buying age (Edwards *et al.*, 1994). Interventions targeting the social environment and interactions have been shown to have an impact on alcohol consumption when conducted together with interventions on the structural level (Holder, 2002, Perry *et al.*, 2002, and Babor *et al.* 2003). On the psychological level, there are many challenges. One is to identify the individuals who are in need of intervention, which may create an ethical dilemma. However, there are promising results with prevention targeting adolescents with multiple problem behaviors (Forster *et al.*, 2005).

#### Alcohol prevention in Sweden – a brief historical background

Sweden has a long tradition of policy making in relation to alcohol consumption. One of the key elements in Swedish alcohol policy is the single distribution theory of alcohol consumption (Bruun *et al.*, 1975). It postulates that changes in the overall consumption of alcoholic beverages have a bearing on the health of the people in any society, with the consequence that alcohol control measures can be used to limit consumption. Another important theoretical model guiding Swedish alcohol legislation is the prevention paradox (Kreitman,

1986). This theory states that for health problems, it is more effective to intervene at the structural level, influencing the entire population, rather than to target only the population at risk. Both these concepts – the single distribution theory of alcohol and the prevention paradox – were published long after their essence was used in Swedish public debate in the alcohol issue. In 1917, the distribution of alcohol became monopoly controlled and rationed. In 1955, the rationing ended. Nevertheless, the Swedish government, supported by an influential temperance movement, has been able to create advocacy for a restrictive policy on alcohol (Holder *et al.*, 1998).

In 1995, Sweden joined the European Union. In the membership treaty, an exception was stipulated concerning the trade of alcoholic beverages. This meant that the Swedish retail monopoly would be retained, together with private import quotas. However, the EU began to criticize the exception, and by the turn of the century Sweden faced deregulated private import quotas, which in turn promoted cross-border trading of alcoholic beverages, since there was, and still is, a significant price discrepancy between Denmark and Germany on the one hand and Sweden on the other (Tigerstedt, 2001).

In the face of this development, the Swedish government became aware that the traditional Swedish policy on alcohol, based on the single distribution theory of alcohol would no longer be effective. To approach the ongoing process, the Ministry of Social Affairs, together with the National Institute of Public Health, initiated a process that



would lead to a new national action plan on alcohol (Swedish Ministry of Social Affairs, 2001). Several ideas that were new to Swedish alcohol prevention were to be tested; among these, community-based interventions.

### Community-based action to improve health

In the international literature, there is no consensus on the term *community*. In 1955, George Hillery studied 94 different definitions of the word and found that in 73% of the cases it referred to “social interaction, area, and a common tie or ties” (Hillery, 1955, p. 118). Other definitions related to psychological bonds and relationships unified by a common objective. Another interpretation of the term was a defined geographical area, with political or economic boundaries. In Roland Warren’s model, a community has five major functions, these are: production/distribution/consumption, socialization, social control, social participation, and mutual support (Warren, 1963). More recently, these functions have also been discussed in relation to the theory of social capital (e.g. Coleman, 1990 and Putnam, 2001), and its implications for health outcomes (e.g. Kawachi *et al.*, 1996 and Lindström, 2000). In this research; social control, social participation, and mutual support are all determinants for health behavior and outcome, both directly and as effect moderators of socioeconomic status.

In Sweden, there are two major approaches to community-based action to improve health. The first is based on a natural science paradigm, focusing

on implementing evidence-based interventions. In these prevention programs the emphasis is on review of the research literature, on evaluation design and result dissemination. One example of this approach is the Stockholm Diabetes Prevention Program (Andersson *et al.*, 2002).

The other direction has been based on a community development paradigm (Warren, 1963). These initiatives focus far less on well-defined interventions. Instead, their objectives are capacity building to create greater social participation and mutual support. This is done through three strategies, as described by Rothman (1979): (1) Organization of a local cross-sectoral action group, (2) reliance on existing local community networks, and (3) continuous tracking of high-risk environments and groups. One example of this approach is the WHO Safe Community project, which has also been implemented in Sweden (Lindqvist *et al.*, 2001)

One of the main differences between the two approaches is ownership. The medical approach demands more external, expert knowledge, identifying evidence-based interventions and how they are implemented, while the community development approach relies on existing networks as its base of knowledge. Consequently, interventions implemented with the latter approach are not likely to be evidence-based, nor designed to be evaluated for efficacy. Their foundation lies elsewhere, namely in their ability to build capacity. Another important difference is that community-based action using the natural science paradigm does not seem to be as frequently applied as the

community development one. However, since documentation and efficacy evaluations are a vital component to the first, this has led to their over-representation in the research literature. Most community-based interventions, though, are a mix between the two approaches. In order to gain access to the field, community-based action needs the mandate of community officials and stakeholders. Thus, interventions with a natural science approach also need a community development component. Community-based interventions with a community development perspective, on the other hand, do not design their actions in a vacuum. These projects and their participants are likely to have basic knowledge regarding which interventions are useful, and which are not.

#### Community-based interventions to prevent alcohol misuse

In alcohol prevention, the community concept was until the late 1990s mainly linked to an administrative area, i.e. a municipality or a county (Hannibal *et al.*, 1995). This has also been the case in Sweden. Two major American studies analyzing the potential of community-based interventions in the field of alcohol prevention were carried through in the mid-1990s. The Communities Mobilizing for Change on Alcohol (CMCA) was a randomized 15-community trial in the mid-West. The trial mainly used a community-development approach, aiming to build a mass base of support for the intervention and to institutionalize the prevention of alcohol related harm in

the intervention communities. The outcome of the CMCA was, to a large extent, successful, with improved drinking practices among 18-20 year olds. The evaluation also showed that the capacity-building component had been well implemented. However, the project did not succeed in institutionalizing alcohol prevention in the intervention communities. The intervention agency (the researchers and their staff) had been the key, and without them present, the interventions faded (Wagenaar *et al.*, 1999 and Wagenaar *et al.*, 2000b).

The second major American study was the Three-Community Trial. This intervention led to a reduction in high-risk drinking and alcohol-related motor vehicle crashes. The strategy was similar to the CMCA, though there was an even stronger focus on limited availability of alcoholic beverages (Holder *et al.*, 2000a).

The first Swedish community-based intervention program, the Kirseberg project, was designed to prevent alcohol problems in one of the administrative areas of the city of Malmö. The key component in this program was a brief intervention given by the primary health care centre servicing Kirseberg (Hanson *et al.*, 1993 and Lindbladh & Hanson, 1994). Thereafter, several other municipalities have implemented city-wide policy plans to reduce alcohol related harm; the Trelleborg project is one such example.

One of the more ambitious community-based intervention projects to reduce alcohol related problems in Sweden, to date, is the STAD-project in Stockholm. Its strategy has been to implement interventions which have

shown efficacy in, mainly, an American context. These interventions are interpreted into a Swedish environment, and their efficacy in this new context is evaluated. The results, e.g., from a responsible beverage service training program, have been most promising (Wallin, 2004).

The approach to reduce alcohol related harm through community-based interventions has, as described above, been evaluated over the past 15 years. This research has resulted in a number of conclusions. Holder (1998) points out the need of a systems approach to community-based interventions; a community should not be considered as only a catchment area consisting of target groups in an individual targeted research project. There is, according to Holder (2000b) no evidence that one can change long-term behavior with an approach that lacks a component to change the system. This conclusion is also underlined by Holmila *et al.* (1997), who show the importance of the stakeholders, which may include both city officials and individuals outside the administrative structures such as the media (Treno *et al.*, 1996), for the successful implementation of a community-based prevention program.

Another important factor is patience. As Giesbrecht & Rankin (2000) point out, a community-systems approach is time consuming, since there are many layers that need to be penetrated before one actually achieves a change within a system.

## Primary prevention of alcohol misuse in adolescence

To successfully prevent adolescent use of alcohol, it is important to understand why young people drink. To some extent, they are bound together by how society thinks of youth. In the western hemisphere today, this means newfound independence as well as a pressure to form an individual identity. Drinking is often regarded as a symbol of adult identity, in contrast to the world of childhood (Wright, 1999). Alcohol consumption, however, clearly goes beyond statements of age. For example, drinking can serve as a marker of time and mood, separating alcohol-free work environments and leisure time in evenings and particularly weekends (Gusfield, 1987). Drunkenness itself is also subject to social expectations and interpretations: how people act under the influence of alcohol varies across countries (MacAndrew & Edgerton, 1969 and Room, 2001).

Drinking may also be motivated by its ability to fulfill different needs that particularly relate to young people's life situation. For example, the latest World Youth Report suggests that "the use of drugs, tobacco, and alcohol may become a means of escaping from situations that youth feel powerless to change" (UN Department of Social Affairs, 2005, p 149). Many other reasons have been suggested, including boredom, psychological distress and sociability (Barnes, 1990 and Milgram, 2001). In the context of pressures related to group membership and identity, it is perhaps not surprising that young people frequently cite the

disinhibitory effects of alcohol (e.g. for sociability, or sexual relations) as a key motivation to drink (Kloep *et al.*, 2001 and Abel & Plumridge, 2004). Another study has divided motivations into three categories: (1) individually-based reasons (relaxation and coping with stressful events), (2) socially based reasons (relationships with others), and (3) peer influence (Honest, Seymour, & Webster, 2000). These are not only similar to the reported motivations of young risky drinkers (Coleman & Cater, 2005), but are also similar to the motivations given by adult drinkers, with the exception of peer influence motivations (Crawford, 1987). It is also likely that different motivations are associated with different patterns of drinking within any particular group (Room 2005); one study found that those seeking an intoxicating effect were more likely to report harmful outcomes than those looking for social facilitation (Coleman & Cater, 2005).

The fact is that adolescents who experiment with alcohol and other drugs exhibit a potentially harmful health behavior. Since they have rather limited knowledge on how to use these psychoactive drugs, there is always a risk that they put themselves into a position where they are unable to control the situation. This can lead to violence, acute alcohol poisoning or a car crash. Alcohol use affects cognitive and physical functions, leading to a reduction of self-control and the ability to assess information and risk. In addition, it increases emotional instability and impulsivity, which increases the risk of an intoxicated person resorting to violence in a confrontation (Graham, 2003). Adolescents, in addition,

do not have a fully developed brain. Intake of ethanol is therefore potentially dangerous for their cognitive skills, especially memory (Tokunaga *et al.*, 2006). It has also been shown that intake of ethanol can result in motor impairment (White *et al.*, 2002)

Research has shown, quite convincingly, that alcohol is one of the major contributors to mortality and hospitalization in adolescence (Hvitfeldt *et al.*, 2005, Rehn *et al.*, 2001 and Rossow *et al.*, 1999). Therefore, there is a good reason to try to prevent adolescent drinking, especially in its most adverse forms.

#### Community-based prevention of alcohol misuse in adolescence

To controlling availability has been the key issue in Swedish alcohol prevention policy. When control became difficult to uphold, as described above, new strategies were called for. The community-based intervention approach has become increasingly prominent in Swedish primary prevention of alcohol misuse. However, as Holder (2000b) describes in his outline of the systems approach to community-based interventions, a community is a multi-faceted system with an array of subsystems. If one target group is prioritized, others might feel neglected. But children and adolescents have a special standing, since they are seen as the future of the community. This makes it easier to rationalize interventions and other actions that promote a childhood protected from risks. Thus there is, normally, strong advocacy within a community

to promote healthy lifestyles for children and youngsters.

Internationally, a few community-based interventions have focused on adolescents and their alcohol use. CMCA was developed and carried out in the mid 1990's. By concentrating on reducing youth access to alcohol through a community-based approach that included local public officials, enforcement agencies, alcohol merchants, the media, schools and other community groups (Wagenaar *et al.*, 1999), CMCA succeeded, when comparing intervention communities with controls, in reducing arrests for driving under the influence (DUI) and reducing alcohol consumption in the age group 15-17. There was also a decrease in disorderly conduct violations (Wagenaar *et al.*, 2000a, 2000b).

CMCA was developed side by side with Project Northland. The latter was a multi-component intervention which included e.g. classroom curricula on alcohol and other drug use, a parent-training program and peer leadership (Stigler *et al.*, 2006). The outcome of Project Northland was promising. The intervention was most successful in younger adolescence. In the intervention communities, the onset age of alcohol drinking was delayed, and young adolescents that had already started to drink did not increase their consumption (Perry *et al.*, 2002).

Other US multi-component projects with other objectives have also shown good results, e.g. Project Six Teen (Biglan *et al.*, 2000), targeting smoking, and Project STAR (Pentz *et al.*, 1989), focusing on illicit drug use. In Europe, the trend within community interventions has been to target

the entire population within the community. In an anthology presenting work across Europe in the late 1990's, this tendency becomes quite clear (Larsson & Hanson, 1999).

The Lahti Project was one such community intervention, targeting everyone in the municipality of Lahti. The project also included school interventions. In the process evaluation of these, it became evident that there is a need for a coherent set of values that is shared throughout the community. If interventions targeting youth are to be successful, it is important that the adult society not only advocates the intervention, but that it also adopts the content (Holmila, 1997).

#### School-based alcohol prevention

In the prevention of alcohol consumption among adolescents, schools have played an important role. They are the societal arena where all young people participate. Hence, community interventions targeting adolescent populations, whether they concern tobacco, alcohol, bullying or obesity, have used schools as their catchment area. In Sweden, the national teaching guidelines state that it is the responsibility of each school principal to make sure that each student has an adequate understanding of the risks of using tobacco, alcohol, and other drugs. Traditionally, students were taught about the risks of using these products in biology class. In 2000, the Swedish National Agency for Education concluded in a report that there were five major difficulties with the school-based education on tobacco, alcohol and other drugs:

lack of objectives, lack of competence, no evaluation or other follow-up, lack of student participation, and no cooperation with parents and community (Swedish National Agency for Education, 2000). At the same time a Cochrane systematic review concluded that there were very few successful studies – i.e. that they reduced consumption – of school based primary preventions of alcohol misuse in adolescence (Foxcroft *et al.*, 2002).

The conclusion, at least in Sweden, from the research findings has been to approach the prevention of alcohol misuse in adolescence more broadly. According to the Swedish national government and its policy documents, successful school-based interventions should include at least five components: (1) policy documents, (2) social and emotional skills training, (3) interventions targeting parents, (4) interventions targeting, or collaborating with, extra-curricular activities, and (5) strong cooperation with the school's health staff (school nurses, psychologists etc.) (Swedish National Agency for School Improvement & National Institute of Public Health, 2003).

The content of the policy documents resembles the idea of the community systems approach introduced by Holder (2000b), with the only exception that the term community has been given a different connotation, *school* instead of *city* or *municipality*. It is, in my opinion, important to understand that the shift in approach regarding school-based prevention of alcohol and drug misuse mainly has derived from criticism of the old way of doing things, not because there are new developments within the field.

What evidence is there that this new approach to prevent alcohol misuse in young age is efficient? The efficacy of having school policies on alcohol and other drug use (component 1) are still not evaluated. There are several reasons for this, mainly methodological ones. To measure the impact of a policy is, too say the least, difficult. Some attempts have been made. In a recent Swedish study, it was concluded that having a health-related behavior approach to school-based health promotion differed more than expected from having a general knowledge approach. However, the study could not conclude whether one approach was more efficient than the other (Guldbrandsson & Bremberg, 2006). In a Dutch study, applying multilevel analysis, by Maes & Lievens (2003), it was concluded that there were significant differences in tobacco and alcohol use between schools, but that these difference could only be explained by individual level effects, even though the researchers had included a vast number of school level variables, including policy.

Even if there is no evidence that schools with policies perform better regarding school-based prevention of alcohol, tobacco and other drug use, there is another aspect that needs to be taken into account. Since alcohol and drug prevention is regarded to be something that is not a core activity, having a policy makes the task more prioritized and minimizes negligence.

There are studies on life skills training programs (component 2) that show positive (Botvin & Griffin, 2004) and less positive results (Vicary *et al.*, 2006). Interventions targeting

parents (component 3) have also been subject to frequent research. The intervention programs Iowa Strengthening Family Program (ISFP) (Kumpfer *et al.*, 2002) and Preparing for the Drug Free Years program (PDFY) (Park *et al.*, 2000) have both shown a positive impact on adolescent alcohol use.

The two final components, extra-curricular activities and school health staff collaboration (components 4 and 5) are areas where research results are still at an inadequate level. One major reason is that extra-curricular activities differ from culture to culture. Therefore, the research in the US is not applicable in Sweden.

### Evaluation of community-based interventions

There are several aspects to consider when it comes to the evaluation of community-based intervention. In addition to the range of different objectives that may be met by an evaluation, there are formative evaluations which are used to tune the intervention, and outcome evaluations estimating the effect of the actions taken (Holmila, 1997).

Furthermore, most community-based interventions include multiple components. There may be a new curriculum on alcohol and other drugs in the participating schools, a program to train parents of teenagers, interventions directed to traders of alcohol, and a responsible beverage service training program. To determine to what degree each intervention contributes to the whole intervention poses a significant methodological challenge.

Nevertheless, the studies cited in the research literature are largely so called community trials. These studies (e.g. Holder *et al.*, 2000a and Perry *et al.*, 2002) have included several intervention communities with matched control communities. This methodology enables the researchers to conclude, with a quasi-experimental design, whether there is evidence that the intervention has an effect (Nilsen, 2005). However, they do not contain enough information on which instruments in the intervention rendered the best effect and vice versa. In addition, they focus entirely on the intervention objectives. It is likely that an intervention that targets the entity of a community has effects beyond those on health determinants. Thus, to be able to investigate what else is happening, other methodologies are needed (Holmila, 1997).

A formative approach to evaluation is not preoccupied with the effects of the program. Instead, it is used to fine-tune the intervention. The methodology, which is qualitative, is used to collect data on the process with the aim of improving the program (Pirie, 1999). Another aspect of a qualitative approach to evaluation is that the data becomes richer. When intervention participants are asked to value their involvement, they tend, in questionnaires, to regress towards the mean. In an interview situation, the response becomes three dimensional, including choice of words, intonation and body language. This richness of information enables a more profound interpretation of the respondents' experiences (Vedung, 1997).

One area that has intrigued researchers is the institutionalization of community-based interventions (e.g. Oldenburg *et al.*, 1999, Holder & Moore, 2000 and Wallin *et al.*, 2004). To investigate these processes a number of different data sources need to be analyzed (Wallin *et al.*, 2004), both formal ones (e.g. public decisions and funding) and informal ones (e.g. interview and observational data) (Patton, 2001).

### Theoretical model

The integrated theory of drinking (see Figure 1) is based on a literature review by Wagenaar & Perry (1994). It emphasizes that alcohol consumption is a result of personal cognitions and perceptions (path O-P, figure 1). However, these are influenced by several factors (paths J-O, I-O and E-O). This reasoning is mainly based on the theories of social learning (Bandura, 1977), where alcohol consumption is a behavior that we are taught by our surroundings to adopt. This means that alcohol consumption is partly due to direct (e.g. friends' encouragement, parental attitudes, and availability) and indirect stimuli (e.g. TV-commercials, media messages, and role models). Other important theoretical input can be gained from symbolic interaction (Blumer, 1969); a theoretical framework that postulates that action is based on our interpretation of settings, symbols and meanings. Yet another relevant perspective can be added by applying the operant conditioning theory, which states that we, as individuals, tend to repeat behavior that is

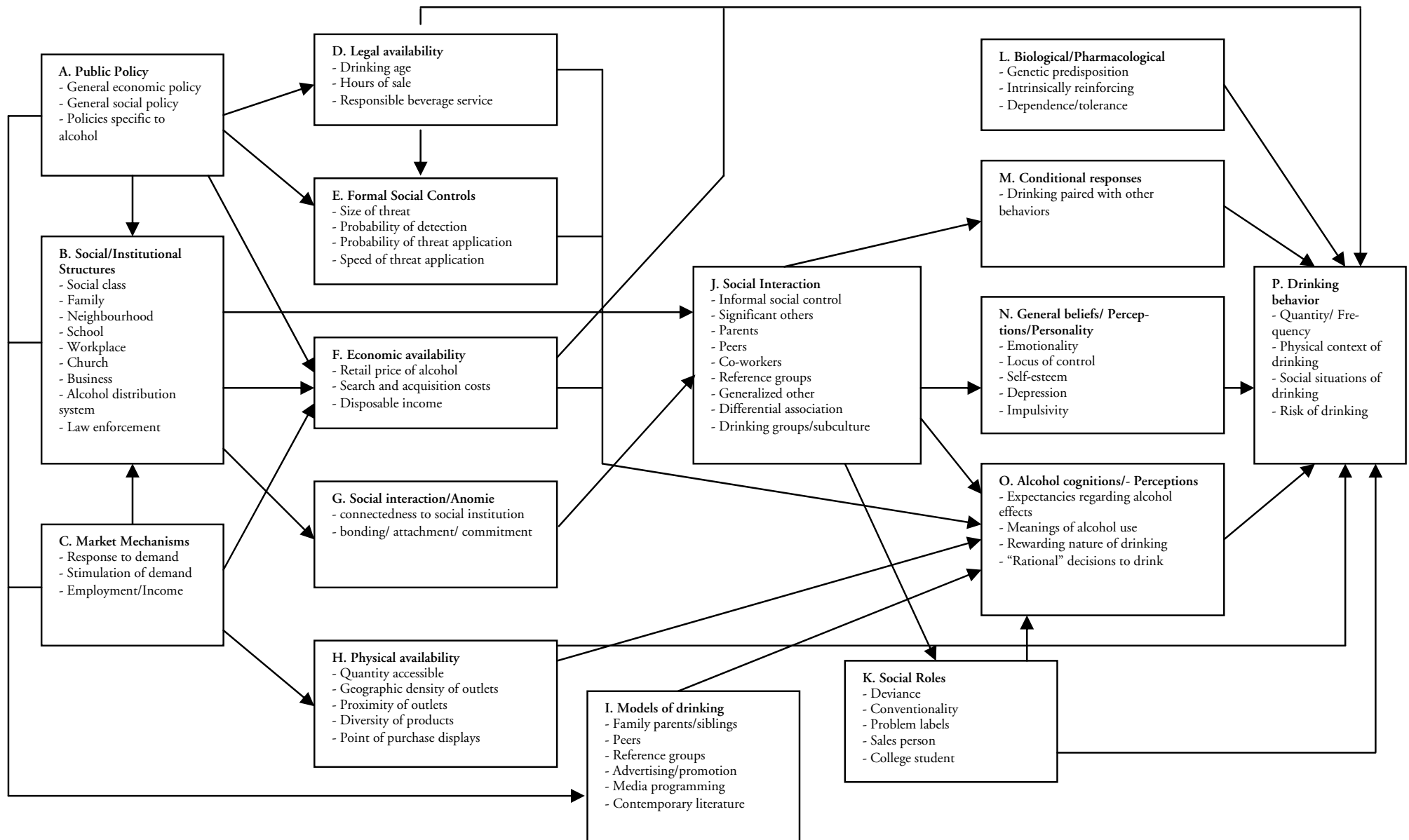
rewarded. These rewards can be of both a social and a biological nature, e.g. the social acceptance gained when drinking alcohol or the sensation of well-being when being drunk (Skinner, 1953). The positive value of alcohol, and the rationality in achieving this, is discussed in the theory of rational addiction (Becker & Murphy, 1988). In the stage theory of alcohol (Kandel *et al.*, 1992), the development of alcohol consumption and other substance use is described as a development in stages from more socially acceptable drugs to ones that are less so.

The integrated theory of drinking also explains the documented difficulties in changing alcohol consumption behavior through educational interventions (Foxcroft *et al.*, 2002). The impact of these efforts is inhibited by other environmental influences. The model also shows that drinking is influenced by factors other than the cognitive and perceptive ones, i.e. availability (physical, economical and legal) and the level of integration into social structures, as well as biological and pharmacological factors.

The theory can be divided into five different levels, in a macro to micro perspective. On the macro level we find factors A-C. On the second level (societal), we find factors D-H. The third level (social interaction) includes factor J, while the fourth level is the micro-level, where factors L-O can be found. The models of drinking (factor L) are placed between the societal and social interaction levels, and the social roles (factor K) are placed between the social interaction and the micro levels.



**Figure 1** An integrated theory of drinking behavior (Wagenaar & Perry, 1994)



The fifth level is the consumption behavior itself (factor P). This thesis explores several of the linkages in Figure 1. The core of community-based public health interventions is the notion that a synergy effect is achieved by influencing the community at large, since individuals within that setting have commonalities shared through networks. Thus, this approach, if successful, will have an impact on all levels of the integrated theory of drinking. However, to be able to investigate how the impact of different factors shapes behavior, one first needs to understand the magnitude of their relationships.

By measuring only the alcohol consumption in a community, and comparing the results over time, one cannot understand changes. On the other hand, by only measuring the changes in factors A-O (Figure 1) one will have no appreciation of the consumption levels. However, these factors are the ones that should be targeted in a prevention strategy, since they are the ones that influence the level of alcohol consumption.

To investigate the institutionalization of the project, we used two different sociological approaches. First, we applied the theory of social change (Etzioni, 1966). In this theory, social change is driven by 'elites', who represent roles and collectives that specialize in initiating, directing and regulating the different subsystems within a social system. These elites respond to four universal functional problems of a social system: (1) The need of the system to be adaptive, (2) goal attainment, (3) internal solidarity, and (4) reinforcement of norms. In larger

social systems, like a community, Etzioni (1966) claims in his theory, the different elites become highly specialized. Politicians and managers tend to become focused on goal attainment, analytical experts target the need for an adaptive system, informal leaders concentrate on the internal solidarity, and cultural leaders primarily deal with the reinforcement of norms.

Institutionalization theories are an elaboration of the theory of social change. These postulate that organizations are influenced by normative pressures, either externally or internally. Zucker (1987) concludes in a review of institutional theories that there are two widespread approaches. The first defines environment as institutions, based on three principles: (a) institutional processes derive from the same rationalization that fuels growth of the state, (b) institutions are state-linked and invariable external to the organization, and (c) institutionalization produces task-related inefficiency, i.e. institutionalization leads to less adaptability and refinement of processes. The driving force behind the process of institutionalization is that the conformity of organizations to the collective norm enhances sustainment and survival (Meyer & Rowan, 1977 and Selznick, 1949). However, the conformity tends to lead to inefficiency, which does not necessarily mean less success (Meyer & Rowan, 1977 and DiMaggio & Powell, 1983).

The second approach defines organizations as institutions. This is based on the following principles: (a) institutional elements are a result of small group or organization-level proc-

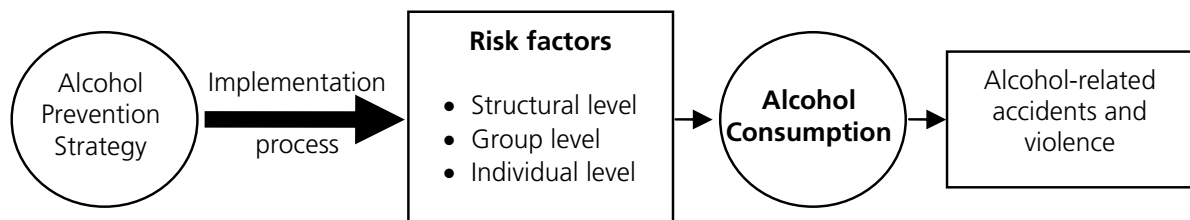
esses, (b) formalized organizational structure and processes tend to be both highly institutionalized and a source of new institutionalization, and (c) institutionalization increases stability by creating routines that enhances performance, except when more efficient alternatives are ignored (Zucker, 1987). The main driving force behind this approach to institutionalization is imitation. New ventures or structures that are built up tend to mimic the institutions in the older parts of the organization and by doing so they gain the legitimacy of the older structure (Abrahamson & Rosenkopf, 1997).

Diffusion of innovation is another application within this theoretical realm. It explains the spread of new ideas and practices, and it applies a similar approach to external and internal input as institutionalization theory, with the focus set on the spreading of concepts, behaviors or policies (Strang & Soule, 1998).

To summarize, alcohol consumption within a society is influenced by a

range of factors acting on different levels. A successful alcohol prevention strategy needs to address at least several of these factors. In addition, community-based interventions need an implementation process in order to reach their target groups. This process requires a balance of internal and external input and pressures in order to become institutionalized. Another factor that shapes the intervention is how success is measured. This, in turn, depends on the aims of the prevention strategy. In the case of alcohol, consumption levels are often regarded as a key indicator. However, when an intervention addresses adolescent populations consumption levels may not be the most relevant outcome variable, since the leading alcohol-related harm in this age group is accidents and violence. Therefore, in order to show that a youth intervention is successful, these outcomes should also be taken into consideration when designing an evaluation (see Figure 2).

**Figure 2** The theoretical model applied in the evaluation of the Trelleborg Project



## AIMS

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### General aim

The general aim of this thesis was to investigate the potential of the community intervention approach to reduce alcohol use in adolescence, in terms of an implementation process evaluation and an investigation of its effects on alcohol consumption and alcohol-related harm.

### Specific aims

- To investigate the strategies needed to institutionalize a community-based alcohol prevention project within the community (Paper I).
- To evaluate a three-year community intervention program by measuring changes in drinking patterns in a 15 to 16-year-old population (Paper II).
- To analyze the impact and possible causal interrelationships of psychological, psychosocial, and socioeconomic factors on frequent high consumption of alcoholic beverages among the Trelleborg secondary school student population (Paper III).
- To analyze if a reduction in alcohol consumption, due to the community-based intervention, has led to a decrease in alcohol-related accidents and violence (Paper IV).

## MATERIALS AND METHODS

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Paper I analyzes qualitative research methods. The data derived from unstructured focus interviews, focus group discussions, and formative discussion seminars (Patton, 2001). We participated in all steering committee meetings, collected minutes from all action group meetings and were observers when interventions took place. In addition, the first draft of the evaluation was submitted to a group of project participants and they were then invited to a seminar where the results of the evaluation were discussed.

The interviews with the different respondents were implemented by either one of the authors (MS) or a field worker (see Appendix A for interview guides). All focus interviews were taped and transcribed. In the final month of the project, we also conducted an evaluation seminar with all action group members. At the seminar (see appendix B), the participants conducted several group discussion exercises and each group participated in a structured, focus group interviews, which was video-filmed and transcribed (Krueger, 1988).

The qualitative analysis was conducted through an iterative explanation-building process, especially applied in case studies (Yin, 1994). It has the following steps: (1) One makes an initial theoretical statement or proposition about a policy or a social behavior; (2) this is then compared with an initial analysis of the case; (3) revision of the initial statement; (4) comparing with other details of the case against the revision; (5) again revising; (6) this process (comparing and revising) con-

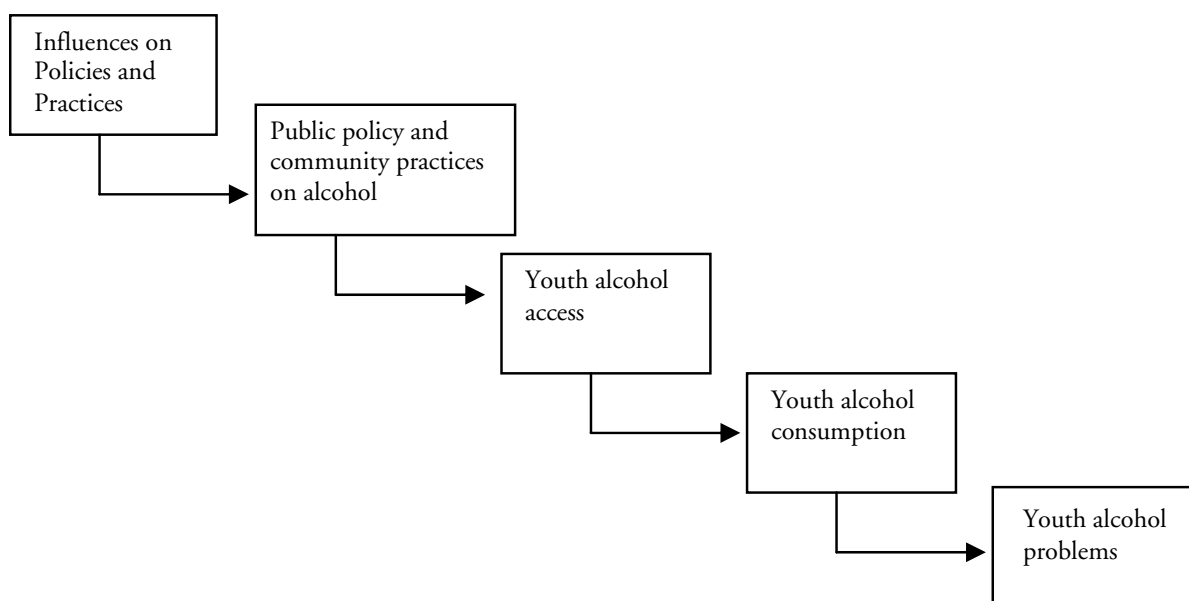
tinues until a satisfactory result has been reached.

Paper I is a short report, and, as such, is an abbreviation of the process evaluation, focusing on institutionalization. In this thesis, we have elaborated the results from this part of the study further.

In Papers II-IV, data from a municipality-wide classroom survey was analyzed. The cross-sectional data sample was gathered by four different surveys: a baseline survey in 1999, one each in 2000 and 2001, and one at the conclusion of the project in 2003. In the first collection, two of the authors of Paper II (M.S. & P.L.) acted as field-workers, distributing and supervising the survey. In the following years, the school staff carried out the distribution and supervision. In 1999, 2000, and 2001, the data was collected at the beginning of May. In 2003, this took place in mid-March. The date change was because this survey was made in collaboration with 20 other municipalities in the region, and the majority wanted to conduct the survey earlier in the year.

In Paper III, students in 10<sup>th</sup> and 11<sup>th</sup> grade were included in the analyses (ages 17 to 19). In Paper II and IV, we have analyzed the 9<sup>th</sup> grade respondents (ages 15 to 16). All students attended public schools in the municipality of Trelleborg, which include five schools with grades 7 through 9 and one with grades 10 through 12.

All students who were present on the day of the study were asked to complete the questionnaire. The

**Figure 3** Stages in the intervention

questionnaires were completed anonymously. All items were based on a national Swedish school survey on tobacco, alcohol, and drug use among 9<sup>th</sup> graders. The questionnaire contained 116 items and included space for comments.

### The Intervention

Trelleborg (pop. 39,000) is Sweden's Southern-most municipality, in close proximity to the third largest city in Sweden (Malmö, pop. 260,000), and a part of the Öresund region (pop. 3.5 million). The demographics of Trelleborg show that the share of unemployed, immigrants, and people on welfare are close to the national averages. The intervention was conceptualized into five stages. (see Figure 3).

This stage-model derived largely from the integrated theory of drinking. The municipality drafted, with

aid from the county department of public health, the first manuscript of the local policy program. Then it was sent to several public officials and other stakeholders outside the city offices.

The policy program objectives that were agreed upon, and amended by the city council, were:

1. To focus the alcohol and drug preventive interventions on children and adolescents.
2. To decrease heavy episodic drinking in Trelleborg.
3. To delay the onset age of alcohol drinking.
4. To achieve changes in behavior and attitudes towards alcohol in the adult population.
5. To sustain the prevention of alcohol and drugs within the community.

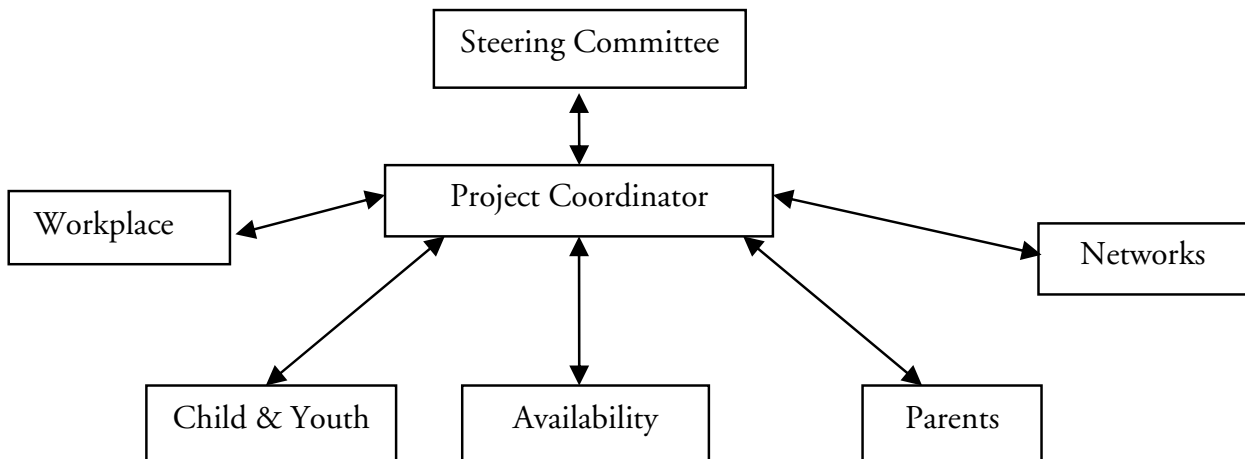
It was decided that the fieldwork should be done by local actors. The municipality then decided to hire a

full-time coordinator. He, together with high-ranking public officials, came up with the idea to recruit a number of “volunteers” within the city administration and among stakeholder organizations. These would then constitute the so called “action group”. When the project had recruited 28 action group members (10 from the social welfare department, 7 teachers and other school staff, 3 from other city offices, and an additional 8 from other organizations including representatives from police, church, private business, sports clubs, and the Swedish Social Insurance Administration), they

all met for a full day conference. At this, the different sub-groups would be constituted, applying value clarification exercises together with the policy program.

The Trelleborg project had the following design (see Figure 4). It was governed by a steering committee. A project coordinator – hired by the municipality – managed and coordinated the actual interventions, and five action groups (all together 28 individuals) designed and planned the interventions.

**Figure 4** A conceptual outline of how the Trelleborg Project was structured



The project resulted in the implementation of seven intervention components: (1) the city council adopted a community policy and action plan on alcohol and drug management. (2) They also approved a school policy and action plan with the same goal. (3) The police and the city administration developed a cross-sectoral approach to inspecting grocery and convenience stores where black market alcohol could potentially be sold—leading to seven inspections, ten police reports, and one conviction during the intervention. (4) A comprehensive, evidence-based curriculum on alcohol and drugs was introduced in all primary and secondary schools, including a textbook that supported problem solving and value-oriented group discussions. (5) A curriculum for the parents of 7<sup>th</sup> through 9<sup>th</sup> graders was designed, although only a pilot group completed it before the end of the intervention. (6) All parents of 7<sup>th</sup> graders were mailed a leaflet containing basic information on what they could do to promote an alcohol and drug free adolescence for their children and (7) a survey of adolescent alcohol and drug use in the community was publicized in the local mass media.

These intervention components were designed and implemented by the different action groups (see Figure 5). The child & youth group designed components #2 and #4. The parent group designed and implemented component #5. The networks group aimed at creating parent networks, the work-place group aimed at improving and implementing alcohol and drug policies in small and medium sized businesses in Trelleborg but did not

succeed. The Restricted access group designed and implemented component #3.

## Population

For the qualitative study in Paper I, we selected seven key stakeholders as interview respondents, and it was decided that they should be interviewed at least twice, the first interview mainly concerned their expectations of the project, while the second one was retrospective. The project coordinator and the 5 key municipality executives fell into this category, together with a county employed public health professional, who was a consultant to the project. The second group of interviewees was the action group participants, but since we did not have the resources to interview all action group participants, we selected one person from each of the 5 groups, overall five respondents, to be interviewed by the end of the project (see Appendix for interview guide). Prior to these interviews, we participated in action group meetings and field interventions. In addition, all, still active, action group members participated in the focus group interviews.

In the dataset analyzed in Papers II and IV the overall response rate was 92.3% (see Table 1). The bulk of the non-responders consisted of those who were absent for such reasons as illness, truancy, or job training. Some questionnaires contained inconsistent information. These were deleted from the data, resulting in internal non-response. In total 1376, questionnaires were collected. For each of the statisti-



**Figure 5** A brief description of planned interventions, results, and sustainability of the actions within each action group.

Action Group	Planned intervention(s)	Results	Sustainability
<i>Child &amp; Youth</i>	To design and implement a school action plan on alcohol and drugs. To implement an education-based substance use prevention curriculum including alcohol, tobacco and, illegal drug education in all K-12 schools.	The city council approved the school action plan in February 2002. The group proposed a curriculum to the school principals. Since the project ran out of time, it was decided that the schools themselves undertake project implementation.	The school action plan is still present. The educational material is not in frequent use in any of the five junior high schools today.
<i>Parents</i>	To design and implement an training program for parents with teenage children, focusing on different problem behaviors (including alcohol and illicit drug use).	Implemented a program developed by a Swedish college in one school district, and started implementation in a second district. Before the end of the project, the responsibility of the program was handed over to the social welfare field unit.	The staff that took over the responsibility of the program had all resigned from their Trelleborg jobs before the end of 2002, and the responsibility of the program was not handed over appropriately, which meant that it did not continue: though, in 2004, all junior high schools initiated COPE (Cunningham <i>et al.</i> , 1995).
<i>Networks</i>	Aimed at creating parent networks	Quite early on in the project, the group was reduced to only two participants. The remaining members switched groups.	N/A
<i>The work-place</i>	Aimed at improving and implementing alcohol and drug prevention policies in small and medium sized businesses in Trelleborg	After implementing a survey among 100 businesses in the city, the group decided to invite the respondents to an information meeting. When only two businesses were interested in attending, the group decided to try a different approach, but they had run out of ideas.	The group kept meeting, but for informal reasons only.
<i>Restricted availability</i>	Aimed at convenience grocery stores in the city. Designed to counter illicit trading of imported tobacco and alcohol.	7 rounds of inspections were performed. All, but one, resulted in police reports. One store-owner was sentenced to heavy fines and was forbidden to run a business for 24 months after selling large quantities of vodka and whisky in his vegetable store.	The police in Trelleborg became homeless by the end of 2001, due to the police station being polluted by mould. In the autumn of 2002, a new police station house was opened. There is an interest to return to the earlier intervention from all participants, though no one in the city administration has taken an initiative in this direction.

**Table 1** External and internal non-response rates for the Trelleborg dataset analysed in Paper II and IV

<i>Survey year</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>	<i>2003</i>	<i>Total</i>
Potential number of respondents	394	326	383	387	1490
Number of respondents absent from class when survey was carried out (external non-response)	20	39	23	12	94
Questionnaires invalidated due to inconsistency (internal non-response)	3	4	9	4	20
Total number of respondents	371	283	351	371	1376
<i>Total response rate (%)</i>	<i>94.2</i>	<i>86.8</i>	<i>91.6</i>	<i>95.8</i>	<i>92.3</i>

cal analyses, the rate of missing cases varied from 10.3% to 10.8%. In Paper IV the abstainers (n=330) were omitted before analysis was performed. In Paper III, analyzing data gathered from students in grade 10 and 11, the response rate was 84.6% in 1999, 89.3% in 2000, and 91.7% in 2001. This resulted in 1,384 valid questionnaires.

### Ethical considerations

Initially, the intended evaluation design was to survey a cohort, consisting of 6<sup>th</sup> and 9<sup>th</sup> grade students, during and after the intervention. However, the research ethics committee revising the suggested design decided that we needed informed and written consent from students as well as parents, which proved to be an impossible task. In the end, more than half of the parents did not reply at all, totaling less than 40% of the parents giving written consent. The ethical committee did conclude that an anonymous and cross-sectional design would only demand informed consent from the respondents, and not their guardians. The qualitative re-

search was carried out with informed consent from all respondents.

Another ethical consideration to bear in mind regarding consent is if it is enough to get consent from individuals approached in surveys (Wagenaar & Wolfson, 1993). In a community-based intervention, the community itself is the object of study. However, it is unlikely that one is able to obtain an informed consent from everyone in a community. In the Trelleborg case, the evaluation was not commissioned by the city, but it was acknowledged by it. Whether this should be considered as being an adequate level of consent may be discussed.

### Statistical methods

In Papers II-IV, we have analyzed the data applying logistic regression modeling. In Paper II, we analyzed five different dependent variables, which were related to the intervention objectives. In Paper III, the outcome variable was frequent heavy episodic drinking. In Paper IV, we investigated the rela-

tionship between alcohol consumption and self-reported alcohol-related harm. In Paper III, we analyzed the effect moderation between different independent variables using a synergy index (SI). This was calculated to disclose effect modification between the chosen variables. The following algorithm was used, whereby  $SI > 1$  signifies a synergistic effect (representing a positive effect modification) and  $SI < 1$  an antagonistic effect (representing a negative effect modification) (Rothman & Greenland, 1998):

$$SI = \frac{(OR_{(1+1)} - 1)}{(OR_{(1+0)} - 1) + (OR_{(0+1)} - 1)}$$

where:

$OR_{(1+1)}$  = odds ratio for dummy variable exposed to both factors

$OR_{(1+0)}$  = odds ratio for dummy variable exposed to one factor

$OR_{(0+1)}$  = odds ratio for dummy variable exposed to other factor

$OR_{(0+0)}$  = odds ratio for the dummy variable unexposed to both factors

In Paper III we also applied a statistical method to calculate the Population Attributable Risk (PAR), here defined as the reduction of prevalence that would be achieved if the population were entirely unexposed to a specified factor, was calculated using the following formula (Levin, 1953):

$$PAR = \frac{(P_e)(OR - 1)}{1 + (P_e)(OR - 1)}$$

where:

$P_e$  = proportion of population exposed to risk factor

$OR$  = odds ratio estimate for risk factor

In Paper II we have analyzed the data using Kendall's tau-c to determine whether the estimated prevalence of the indicators between surveys was significantly different. This provides a nonparametric measure of the agreement between two rankings, by calculating the number of concordant and discordant pairs of observations, while it controls for tied ranks and number of rows. Kendall's tau-b assumes that the table is symmetric, while the Kendall's tau-a does not control for tied ranks (SPSS, 1999). The Kendall's tau-c value ranges from 1 to -1, where 1 is perfect association. Null association is defined in terms of statistical independence (Kendall, 1970).

All statistical analyses have been made with the computer software SPSS (Paper III version 11.0 and Papers II, IV version 12.5).

## Measures

### *Alcohol consumer*

A prerequisite, disregarding quantity and frequency, for being subject to individual alcohol misuse is consumption. However, it is not evident how this should be defined. WHO defines a 'consumer', as someone who has drunk any alcohol within a specified time (WHO, 2000). It is also recommended that the definition should be decided by a dichotomous question, rather than using quantity – frequency questions (ibid).

*Heavy episodic drinking*

In Papers II and III, heavy episodic drinking was used as an outcome variable. Heavy episodic drinking is in this thesis defined as having consumed 60 grams of alcohol in one drinking occasion. When work commenced on this thesis there was no single term that was in general use for this occurrence. Since then, the American National Institute on Alcohol Abuse and Alcoholism has presented a guideline where they state: "A 'binge' is a pattern of drinking alcohol that brings blood alcohol concentration (BAC) to 0.08 gram percent or above. For the typical adult, this pattern corresponds to consuming 5 or more drinks (male), or 4 or more drinks (female), in about 2 hours." (NIAAA, p 3, 2004).

That heavy episodic drinking – or if one prefers, binge drinking – is a health threat has been well documented. Previous studies have shown that high and frequent consumption of alcohol during adolescence is a strong determinant for alcoholism in adulthood (Kandel *et al.*, 1992, Hawkins *et al.*, 1997, Pedersen & Skrondal, and 1998 Grant *et al.*, 2001). Moreover, these studies find that the earlier the experience of intoxication, the greater the likelihood of high alcohol consumption in later years. Research has demonstrated (Gmel & Rehm, 2003 and Windle, 2003) that frequent high alcohol consumption in adolescence also increases the risk for a number of health hazards (e.g., driving while intoxicated, cigarette smoking, marijuana use, bodily injury), as well as the potential for violent behavior.

The variable for frequent high alcohol consumption was based on four

open-ended questions asked of students who had consumed alcohol in the last 12 months (87.2%). These were: "How many times in the last 30 days have you had six cans of low strength beer (3.5 vol. %) on one occasion?", "Six bottles (or four cans) of normal beer (more than 3.5 vol. %)?", "One bottle of wine?" and finally, "Half a bottle (0.35 liters) of hard liquor?" The value of each of the four answers ranged from 0 to 30 (each occasion  $n = 1$  point) and were totaled. Individuals scoring 1 or more were coded as having experienced heavy episodic drinking during the previous month. The non-response rate was 6.5%. In the 2003 questionnaire, the four questions were combined into one: "How many times during the last 30 days did you happen to drink 6 cans of medium strength beer, or 6 either bottles or 4 cans of normal strength beer, or 1 bottle of wine, or half a bottle of hard liquor, or the equivalent, on one occasion?".

*Excessive drinking*

This measure was based on the following question: How often do you get drunk when you drink alcohol? The answer alternatives were: (1) Do not drink alcohol, (2) never get drunk, (3) seldom, (4) sometimes, (5) almost every time, and (6) always. Alternatives (5) and (6) were added together to define the excessive drinking category. It measures the objective each respondent has had when he has been drinking. As the level of intoxication predicts several alcohol-related harms (Taylor & Chermack, 1993, Zhang *et al.*, 1997, and Graham *et al.*, 2006), it

was a logical intervention objective to try to reduce the excessiveness in the drinking culture.

#### *Availability of alcohol*

One of the key intervention objectives was to reduce the availability of alcohol in the adolescent group in Trelleborg. As all alcohol, per definition, obtained by minors in Sweden is illicit, two strategies were laid forward to achieve this aim. The first was to intervene against those adults who sold alcohol to minors. The second was to raise awareness among parents about their responsibility, and convince them not to provide alcohol to their youngsters. There are several research reports on how both interventions targeting businesses (Lewis *et al.*, 1996, Jones-Webb *et al.*, 1997, and Kuo *et al.*, 2003) and parents (Cohen & Rice, 1995 and Spoth *et al.*, 1998) are effective in reducing adolescent alcohol use.

For each type of alcoholic beverage — low strength beer or cider, full-strength beer or cider, alco-pops, wine, and hard liquor — the respondents were asked how they obtained it. There were 13 alternatives, two of these were “Purchased from an adult” and “Gave money to an adult to buy it for me”. The responses from these two items were totaled and coded as purchasers of alcohol. Another answer alternative was that “parents had consented to provide alcohol”.

#### *Self-reported alcohol-related accidents and violence*

In a small community as Trelleborg, the number of annual reported injuries in the age group in question was not large enough to allow us to perform statistical analyses of register data. In the research literature there are several studies that have been able to establish that there is a strong connection between alcohol and aggression; in terms of being both an aggressor and a victim (Bushman & Cooper, 1990, Kingma, 2000, and Cherpitel *et al.*, 2005), which increases with level of intoxication (Taylor & Chermack, 1993).

To analyze the outcome of the project in relation to alcohol related accidents and violence we used to items in the questionnaire connected to the following question: “Have you ever been involved in an accident/in a fight because you had been drinking alcohol?” The answer alternatives were: (1) never, (2) once, (3) twice, and (4) three times or more. The two variables were dichotomised by categorizing all students, for each variable, who had any experience of the mentioned event into one group, and those who had no such experience, into another.

There are no research reports on the validity of the two outcome measures used in Paper IV. However, they are not strikingly different from the questions regarding alcohol intake, which should imply that their validity is about equal.

## RESULTS AND CONCLUSIONS

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### **PAPER I:** The Trelleborg Project: a Process Evaluation of a Multi-Sector Community Intervention to Reduce Alcohol Consumption - Related Harm

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#### Objective

The aim of this paper was to investigate which strategies were applied to institutionalize the project within the community, and how these strategies evolved during the project.

#### Results

Using theories of social change and institutionalization the paper finds that the project raised several issues regarding alcohol related harm within the community. A factor, in interpreting the process, was that the project was an ad-hoc construction, positioned outside the city administrative hierarchy, with a cross-sectoral design. Different actors had, therefore, different directives and motives for participating in the project. These differences were seen throughout the project organization.

The fact that the project was added, not included, to the organizational structure had consequences for the institutionalization of the alcohol prevention issue. E.g., the action group participants were handed an expert role by their managers, without securing expert knowledge. When interviewed in the closing stages of the project, one action group member told us what happened when he returned to his

workplace after a one-day conference in the initial stages of the project:

*“They thought that I was this big expert on alcohol prevention, and I thought so too. They asked me questions, and I happily responded. Now [two years later] I know better. Every single answer I gave them was more or less wrong. And frankly, more or less every discussion we had in our action group was based on false assumptions, at least that was the case the first year or so.”*

During the course of project implementation, the five action groups developed at a different pace. The guides in the process were the project coordinator and the policy program. A factor that shaped the project, from start to finish, was “time”. One participant, who was interviewed, told us:

*“Initially, I was grateful that I could spend 10 % of my work day on the project. After a while I really felt that those 10 % were more or less nothing. It was not enough time to get things going. [...] Since we worked in a group, and we had different assignments, it was difficult to arrange meetings, and that meant that the work progressed in a very slow pace. Then, a year into the project, one of the other group members came across this intervention, and I remembered how relieved I felt, because by then, we all in the group, the initial enthusiasm had definitely faded away.”*

The project strategy assumed that the structure would encourage and enable empowerment among the action group members. The empowerment of the participants would, according to this strategy, enable institutionalization. The above citation shows that this was the case initially. Later on, however, the slow pace of the project development had an impeding effect on the empowerment process. One action group – restricted availability – did not report this particular difficulty to the evaluators. On the other hand, this group became active at an early stage in the project.

Initially, it was thought that the steering committee would play an important role. As the first steering committee proved to be too large and unwieldy to generate constructive ideas, a new one was created, after a dialogue seminar between the steering committee and the action groups, midway into the project. However, this did not change the degree of involvement. They did not participate in the design of the interventions or the implementation of them. From our point of view, this showed that the initial processes within the project were not anchored in a sufficient manner.

The key role of the steering committee became to manifest a mandate. However, the interpretation of this mandate was not clear. In the evaluation seminar held by the end of the project, the issue which all participants highlighted was “mandate”. They felt that they had had the mandate to work within the framework of the project, but not that they had been encouraged to develop it further. Many action

group participants felt discouraged by this.

In the evaluation seminar, the action group participants ranked “investment for the future” as a key component in their decision making process. Their interpretation of the chief administrator’s position was that he did not share that understanding. Concurrently, another process was underway, the project became important for the people involved, and this was not the case for people outside the action group. In one of the group-discussions at the seminar the following dialogue was recorded:

*Participant 1: “Our head of department has never been interested in what we were doing in the project”*

*Participant 2: “And that is so strange, our intervention could really make a change.”*

*Interviewer: “Have you approached him regarding his lack of interest”*

*Participant 2: “Yes, but he would not admit it”*

*Participant 1: “He said that he did not have enough time to concern himself with issues and projects that ran without problems, such as ours.”*

*Interviewer: “But isn’t that what should be expected”*

*Participant 1: “I believe a good boss is a boss that encourages the staff, and in this case I do not get the encouragement I need”*

The structure of the project process aimed to be innovative. The municipality was a traditionally organized bureaucracy, with structured division of labor and responsibility, while the project was cross-sectoral, both at the management and at the action level. The idea behind it derived from exter-

nal input, though it was supported by some leading administration officers. Eventually, the officers advocating the less bureaucratic approach resigned. We conducted an interview with the new chief administrator, when he had been installed. In the interview he concluded:

*“A project is a project. To me, that means that when the project ends, the successful parts are adopted by the organization and the not so successful activities are discarded. [...] And in this case, a successful activity is something that has shown to have an effect.”*

This was a new approach, and it implied that the present structure would not be promoted by the new chief administrator. The change was not appreciated by the action group members. They felt that they had been let down, or as one action group member told us:

*“My impression was that our role [the action group] was to develop interventions that the steering committee would make permanent. Now I understand that the administration will only keep what is already working. To me that is not fair. We, in our group, are still at the pilot stage. What will happen to our intervention now? Our experience is that it is a good intervention, but the implementation is not finished.”*

Even though many of the action group participants have criticized project components and leadership, many of them have been underlining that they

have felt that they have made a contribution to their community. The groups that implemented interventions were content with what they had achieved. One of the groups, the workplace, did not finalize an intervention, however at the evaluation seminar they concluded:

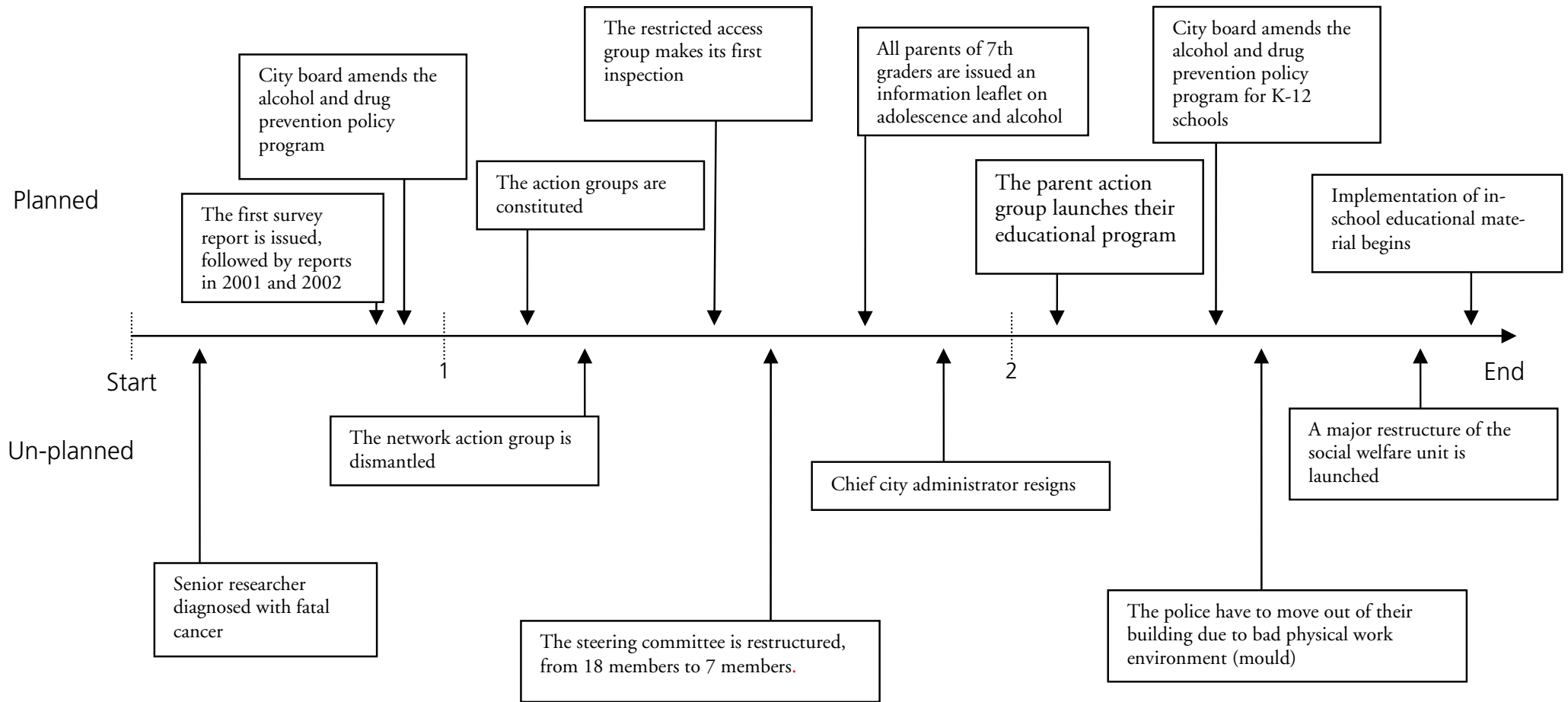
*“Now there is knowledge base, regarding alcohol in the workplace. We know which employers have an alcohol- and drug policy and which haven't. Even if we didn't get an intervention underway, this knowledge may come to use in the future”*

## Conclusions

The paper concludes that the difficulties within the project to some extent were a result of problems relating the process of social change and different aspects of institutionalization. In Trelleborg, there was a common denominator for positive change. However, as the project got underway, conflict-based interaction became more dominant, resulting in a lack of common ownership and sustainability. What countered the initial constructive interaction and caused project processes to lose momentum was partly the latent internal conflict within the organization, partly the strong external pressure, which ran counter to the dominant culture of the organization, and partly that the project faced several unplanned events.



**FIGURE 6** Planned and un-planned project events from start to finish



## **PAPER II: A Community Action Program for Reducing Harmful Drinking Behavior among Adolescents: the Trelleborg Project**

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### Objective

To evaluate a three-year community intervention program by measuring changes in drinking patterns in a 15 to 16-year-old population.

### Results

The results of our analyses indicated a decrease in harmful drinking behavior in Trelleborg when comparing baseline with post-intervention measurements. The comparison with other studies showed that the changes in these indicators were more rapid and consistent in Trelleborg. Finally, the bivariate binary logistic regression analysis (Table 2) showed that there were significant differences between survey years in relation to outcome measurements. The majority of the independent vari-

ables were also significant risk factors for the dependent variables. In the multivariable analysis, the same trends remained manifest over time. When independent variables were incorporated into the analytical model, almost no changes resulted in the odds ratios over the course of the survey.

### Conclusion

According to the indicators used, the prevalence of hazardous drinking decreased during the three years of the community intervention. The reduction did not appear to be a result of environmental factors outside the scope of the intervention. The congruent development of behaviors that the intervention targeted also supports our conclusion that it was effective in bringing about the project's objectives.

**Table 2** Bivariate logistic regression of outcome variables investigated, presented as odds ratios (OR) and 95% confidence intervals (CI), using 1999 as reference category for survey year, controlled for gender

		Consumer of alcohol		Excessive drinking		Heavy episodic drinking		Purchaser of alcohol		Alcohol provided by parents	
		OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Survey year	2000	0.9	0.6-1.3	1.2	0.9-1.6	1.1	0.8-1.4	0.6	0.4-0.9	1.0	0.6-1.5
	2001	0.7	0.5-1.0	0.7	0.5-1.0	0.8	0.6-1.0	0.4	0.2-0.6	0.5	0.3-0.8
	2003	0.5	0.3-0.6	0.5	0.4-0.7	0.5	0.3-0.6	0.8	0.6-1.2	1.0	0.7-1.5
Socioeconomic indicators	Born in Sweden	2.7	1.8-3.8	2.8	1.8-4.5	1.9	1.3-2.9	1.3	0.7-2.2	1.9	1.0-3.9
	High purchasing power	1.8	1.4-2.4	2.1	1.6-2.6	2.1	1.7-2.6	2.2	1.6-2.9	1.2	0.8-1.6
	Not living with both parents	1.4	1.0-1.9	1.7	1.3-2.1	1.1	0.8-1.4	1.4	1.0-1.9	1.3	0.9-1.8
	Living in single family house	1.2	1.0-1.6	0.9	0.7-1.1	1.0	0.8-1.3	0.8	0.6-1.1	1.1	0.8-1.5
Daily habit indicators	Daily tobacco use	5.4	3.3-8.9	5.6	4.2-7.4	5.3	4.0-7.1	2.6	1.9-3.6	1.7	1.2-2.5
	Not engaged in weekly sports	1.0	0.8-1.4	1.1	0.9-1.5	1.0	0.8-1.3	0.8	0.5-1.1	1.3	0.9-1.9
School-related indicators	Monthly truancy	3.1	2.0-4.7	3.5	2.6-4.7	3.2	2.4-4.2	2.1	1.5-3.0	1.7	1.1-2.5
	Dislikes school	1.7	1.2-2.3	1.5	1.2-2.0	1.8	1.4-2.3	1.6	1.2-2.3	1.5	1.0-2.1
	Gender: Male	1.0	0.8-1.3	1.1	0.9-1.4	1.2	1.0-1.5	1.0	0.7-1.3	0.8	0.6-1.1

## **PAPER III:** Risk Factors for Frequent High Alcohol Consumption among Swedish Secondary School Students

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### Objective

To analyze the impact and possible causal interrelationships of psychological, psychosocial, and socioeconomic factors on frequent high consumption of alcoholic beverages among the Trelleborg secondary school student population.

### Results

Interest in trying drugs was the strongest indicator for frequent high alcohol consumption, after adjusting for age, socioeconomic status, and psychosocial risk factors (boys OR 3.9, 95% CI 2.5-6.0; girls OR 2.7, 95% CI 1.8-3.9). This variable also had the highest population attributable fraction (PAF<sup>1</sup>) (boys 39%, girls 29%). High purchasing power increased the risk of frequent high alcohol consumption (boys OR 2.1, 95% CI 1.4-3.0, PAF 25%; girls OR 1.6, 95% CI 1.1-2.3, PAF 16%). The association between high alcohol consumption and psychosocial factors differed by gender. Participation in organized team sports was associated with increased risk among boys (OR 3.0, 95% CI 2.0-4.7, PAF 32%), but not girls (OR 1.0, 95% CI 0.7-1.5, PAF 0%). Parental acceptance of alcohol consumption was more important for the latter (girls OR 1.7, 95% CI 1.2-2.3, PAF 27%; boys OR 1.5, 95% CI 1.0-2.1, PAF 21%).

### Conclusion

The results of our study show that there are different domains of risk associated with frequent high alcohol consumption in a teen-age population. They also strongly indicate that what causes some adolescents to drink more than others do cannot be reduced to a single reason. The association between “interest in trying drugs” and “frequent high alcohol consumption” seemed to increase when other variables were added to the model. The analysis of the psychosocial domain yielded different results for boys and girls. Among boys, an athletic environment seemed to have a greater influence on drinking habits, whereas for girls the family appeared to play a stronger role.

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<sup>1</sup> This term is equal to the more commonly used Population Attributable Risk (PAR), see page 26 for an in depth explanation

**Table 3** Multivariable analysis of frequent high alcohol consumption presented as odds ratios (OR) and 95% confidence intervals (CI) and adjusted for gender, grade, and survey year in a Swedish secondary school population with boys and girls combined

	<i>OR</i>	<i>95% CI</i>	<i>OR</i>	<i>95% CI</i>	<i>OR</i>	<i>95% CI</i>	<i>OR</i>	<i>95% CI</i>	<i>OR</i>	<i>95% CI</i>
Interest in trying drugs	3.1	2.4-4.1	3.0	2.3-4.0	3.0	2.2-3.9	3.1	2.3-4.1	3.1	2.3-4.1
High purchasing power			1.9	1.4-2.4	1.8	1.4-2.3	1.8	1.4-2.3	1.8	1.4-2.3
Parental acceptance					1.5	1.2-1.9	1.5	1.2-2.0	1.6	1.2-2.0
Organized team sports participant							1.7	1.3-2.3	1.7	1.3-2.3
Unemployed parent									1.0	0.7-1.6
Being male	0.7	0.6-0.9	0.7	0.6-0.9	0.7	0.5-0.9	0.7	0.5-0.9	0.7	0.5-0.9

## **PAPER IV:** A Community-based Intervention to Reduce Alcohol-Related Harm in Adolescents: an Evaluation of Self-Reported Alcohol-Related Violence and Accidents

### Objective

To analyze if a reduction in alcohol consumption, due to the community-based intervention, has led to a decrease in alcohol-related accidents and violence.

### Results

There was a strong indication that self-reported alcohol-related violence had changed between 1999 and 2003 (OR 0.4, 95% CI 0.43-1.01). Alcohol-related accidents were significantly lower when comparing 1999 with 2001 (OR 0.5, 95% CI 0.27-0.76).

However, when controlling for excessive drinking and frequent consumption of hard liquor these associations were substantially reduced (Table 4). These results indicate that the reduction of excessive drinking, in particular, has had an impact on self-reported alcohol-related harm.

### Conclusion

The decrease in alcohol-related accidents and violence among 15-16 year olds in Trelleborg, between 1999 and 2002, can be attributed to a reduction in excessive drinking and frequency of distilled spirits consumption.

**Table 4** Bivariate logistic regression of outcome variables investigated, presented as odds ratios (OR) and 95% confidence intervals (CI), using 1999 as reference category for survey year

		Alcohol-related <i>violence</i>		Alcohol-related <i>accident</i>	
		OR	95% CI	OR	95% CI
Survey year	2000	1.1	0.74-1.66	1.1	0.71-1.70
	2001	0.8	0.56-1.27	0.6	0.39-1.01
	2003	0.7	0.43-1.01	0.5	0.27-0.76
	Excessive drinking	5.6	3.94-7.88	4.9	3.37-7.23
	Frequent consumption of hard liquor	1.9	1.32-2.62	1.8	1.27-2.67
	Gender <sup>a</sup>	1.2	0.88-1.63	0.9	0.63-1.23

<sup>a</sup> Female as reference category

## GENERAL DISCUSSION

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This thesis concludes that by implementing a community alcohol policy program, including a plan of action, a municipality may influence adolescent alcohol use. Claiming this, however, there are a number of methodological considerations that need to be addressed, and these will be discussed

### Community-based intervention and its challenges

To some extent, the Trelleborg Project differs from most other community-based interventions to prevent alcohol misuse reported in the research literature, because the project was owned by the community itself. The research funding was used to evaluate the project, but it did not finance the implementation process. Another significant difference is that the project was not part of a community trial intervention (i.e. Pentz *et al.*, 1989, Holder *et al.*, 2000a, Wagenaar *et al.*, 2000b and Perry *et al.*, 2002), something that will be discussed below. These differences, however, did not mean that the Trelleborg project had to face challenges that were significantly different from those of prior research projects.

A conference paper published in 1993 by Wagenaar & Wolfson lists six tradeoffs between science and practice when designing a randomized community trial. These are: (1) Objective research vs. community action, (2) power of research design vs. power of intervention, (3) easy vs. difficult interventions, (4) individual vs. commu-

nity consent, (5) empowerment vs. control, and (6) conflict vs. cooperation. In the project that Wagenaar and colleagues designed and implemented, the CMCA, the researchers initially aimed for objective research. Thus the most important issue was the research design of complex interventions in need of individual consent, while keeping control over the intervention in collaboration with the participating communities.

In Trelleborg, the initial idea was rather the opposite. The prevailing perspective was that the project would be community-driven. We, as researchers, would record the events and evaluate the results, but we would not participate in design and implementation. In both research projects, Trelleborg and CMCA, the evaluators had to compromise. The tradeoffs mentioned above are not dichotomous, but rather continuous. In communicating and interacting with the community one finds oneself constantly moving within that continuum.

One such example, discussed in depth in Paper I, is the question of institutionalization. Quite early in the process the researchers sought after a strategy to sustain the program in Trelleborg, but the intervention participants were too pre-occupied with intervention design to concern themselves with the issue of institutionalization. We had aimed for a very passive role within the project, but since we strongly believed that disregarding long-term aspects would have negative consequences, we decided to communicate our concerns. These were ac-

knowledge, and discussions were initiated. However, this had two side effects. First, the community intervention participants now considered us to be a project resource, and second, they became more aware of our evaluation and asked more questions about it, which we to some degree interpreted as suspicion rather than curiosity.

Another difficulty in community-based multi-component interventions is to conclude which component has impact on the results. The Trelleborg project was not, at least from an implementation process standpoint (as described in Paper I), a success. Nevertheless, the results (Papers II and IV) show that there has been a reduction in alcohol consumption among the Trelleborg adolescents. Three components in the intervention can be regarded as more successful than the others; (1) the municipality's policy on alcohol and other drugs, (2) the inspection of grocery stores, (3) and feedback from the school surveys. These were all given media attention. This, in turn, raised awareness and intervention advocacy (Finnegan & Viswanath (1999)). The leaflet, intervention component #6, was used to boost this awareness. The other components were implemented either at a very late stage in the intervention or only at pilot sites.

In addition to the three components above, there is a fourth one; the project included, by design, a capacity building component. Thus, several community stakeholders were involved in raising community awareness. The alcohol issue thereby became a vital part of the local agenda, and the action group members diffused their new-

gained knowledge within their social and professional networks.

From this, we draw two important conclusions. First, raising awareness is in itself a very effective short-term intervention, but it needs constant boosting. Second, to achieve either stronger or longitudinal effects on behavior, it is likely that more elaborate measures are needed, which the results on the adolescent alcohol availability indicators in Paper II show. As shown in Paper III, one potentially valuable approach would be to target parents to a greater and more systematic extent, since they have an important role in controlling availability. A third conclusion, which relates more to the process than to the outcomes, is that community action with a grass-root orientation is a laborious process. When handing over control to a large body of people there is bound to be difficulties. First, one has the problem of staff changes. Second, there are time allocation predicaments, and the decision-making process is not efficient due to constant need of consensus. However, there are also gains. The community identifies with the intervention, since the diffusion process becomes more thorough, and this identification may result in empowerment. In this context, it is noteworthy that an earlier community-based intervention to reduce adolescent drinking, the CMCA, also concluded that institutionalization within the city administration was not a prerequisite for obtaining targeted results (Wagenaar *et al.*, 1999).

Whereas the institutionalization process suffered from an imbalance between external and internal input,



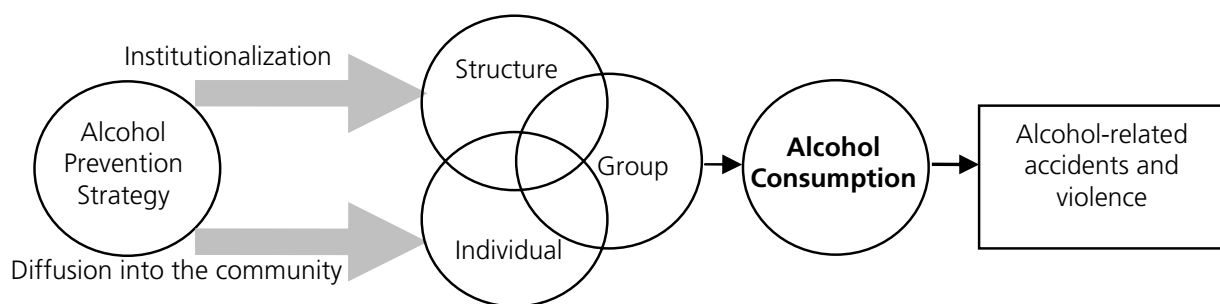
the diffusion of the alcohol issue did not. An example illustrating this development was the fact that the municipality, two years after the project completion, recruited an alcohol and drug coordinator. The idea that the alcohol issue was a community responsibility had been anchored within the city administration, but the applied strategy (i.e. the Trelleborg project structure) was not. In addition, the strategy has also changed, from a utility-based perspective – “What can we do?” – to a problem-oriented one – “What should we do?” – based on the knowledge gained from studies on risk and protective factors, such as Paper III.

Relating to Figure 2 (p 17), the analysis of the Trelleborg project has led to a revised version of the evaluation model (see Figure 7). First, the implementation process targeting institutionalization and the intervention effects do not, by necessity, have

to be correlated. A community-based intervention has the community as its target, whereas the institutionalization process targets the municipality (i.e. the city administration). These are different target groups; hence, results and effects do not have to be similar. However, it is reasonable to assume that if the two processes coincide, then the potential for coherent long-term effects is increased.

In addition, the evaluation did not focus on the diffusion of the alcohol issue into the community. There are indications that the intervention was more successful in this process than it was in the institutionalization within the city administration, and the results suggest that this might even have had a greater impact on the outcome than we anticipated. However, since diffusion was not hypothesized when the evaluation was designed, there is a lack of data.

**Figure 7** A revised model to evaluate community-based alcohol interventions



## Implications for future research

In Sweden today, there are a number of ongoing community-based interventions, e.g. more than half of the Swedish municipalities have an alcohol and other drugs coordinator. Most of these have financial support from the ministry of social affairs (Swedish ministry of social affairs, 2001 & 2005). A small number have research grants (Andréasson, 2005 and Stafström, 2005). Thus, it would be fair to say that community-based interventions targeting alcohol and drug prevention have been adopted as a strategy in Swedish alcohol policy. This also implies that there is a growing knowledge on community-based intervention strategies in Sweden, particularly regarding practice. Documentation of this process and its development would have national as well as international implications.

Some initial research has already been reported. In a report by Spak & Blanck (2006), some of the possibilities and obstacles in implementing community-based interventions are discussed. One of the most interesting aspects brought forward in the study is that even if the studied communities (49 different municipalities) all have been autonomous in their strategic planning of their interventions, all have focused on adolescents. Wagenaar & Wolfson (1993) describe how it is easier to implement interventions at the community level that target minors, since this lacks controversy. A question to study in future may hence be how communities can be encouraged – in terms of financial incentives,

epidemiology, strategic support etc. – to turn their attention to adults and their alcohol consumption.

Another issue for future research is the community empowerment (Bracht *et al.*, 1999) achieved by increasing self-esteem and self-efficacy (Bandura, 1986) among the citizenry through community participation (Jackson *et al.*, 1989 and Florin & Wandersman, 1990). In this context, it is vital to study how social networks and community participation emerge and how they is promoted. At the community-level, one finds the social networks that are vital in shaping an individual (Thompson & Kinne, 1999). However, in this arena there is also a considerable resistance to change. New norms are not set overnight. Rothman (1979 & 1996) shows that pure grass-root level change, or as he puts it “social action”, demands conflict to take place. In Trelleborg, another strategy was used; namely locality development, using Rothman’s terminology. This strategy poses that community leaders take the initiative, but they involve community residents in identifying and solving the problem. To gain a better understanding of how change at the community-level occurs, and which paths of change empower the citizenry, more research is needed, especially in the field of alcohol prevention.

On a similar note, few studies in the alcohol field have researched the importance of social interaction in primary prevention. This takes place on at least two levels; within organizations and in prevention delivery. Several authors, as described by Finnegan & Viswanath (1999), have pointed out

the difficulties on both levels, but these studies have not been conducted in the alcohol field, with its particularities.

The body of research on community-based interventions has been accumulated in waves. The first wave was in the mid-1990's, the second around 2000. Now there might be a new one approaching. Since each cluster of reports has been able to use the experiences from the prior one, a meta-evaluation of the existing work is called for (Scriven, 1969 and Smith & Hauer, 1990). Several studies have found similar results, but there are also differences between them. In order to analyze what determines the success of a community-based intervention, such meta-analyses would be most helpful.

Another area where more research is needed is to determine to what degree community-based interventions contribute to reducing alcohol-related harm among adolescents, such as accidents and violence. Paper IV suggests that the reduction in excessive alcohol drinking and frequent consumption of distilled spirits in Trelleborg have contributed to a decrease in alcohol-related harm. However, the methodology applied admittedly has its weaknesses, and studies with a more rigid design would therefore be welcomed.

### Methodological considerations

The evaluation of the Trelleborg project was designed to gain understanding on what happened when a community implemented a community-based intervention, not to investigate the intervention efficacy. The intention was to study an implementation

process of an intervention that would be as close to reality as possible. This implies that all staff was hired and financed by the community, that all decisions were made by the community, and that all planning, designing and implementation of interventions were carried out by the community or by agencies commissioned by it. When looking back, however, we can identify actions from our part that diverged from this course. We provided the community with ideas as well as resources, especially by disseminating the results of our evaluation surveys. Even though, it is important to note that we never participated in the decision-making, nor did we participate in the design meetings of the different action groups. Nevertheless, we believe that the research of the Trelleborg project is largely a study of a naturalistic program implementation process.

Papers II-IV analyze cross-sectional data. The methodology of collecting such data regarding alcohol and drug consumption behavior is always prone to selection bias. In this case, the municipalities conducted a sampling of all 9<sup>th</sup> grade students within the public school system. It could be assumed that the most marginalized section of the student population, with the most advanced alcohol habits, were not included in our sample, due to absence. If we assume that they were less prone to respond to the intervention, we would overestimate the effect of the intervention in a total student population perspective. Given that the non-participation was small, less than 10 %, we do not think that this circumstance seriously invalidates our conclusions.

The validity of collecting alcohol consumption data in a school setting has been discussed in several studies. The results have consistently shown school surveys on alcohol and drug use to be valid (Brener *et al.*, 1995 and Solbergdottir *et al.*, 2004). Admittedly, the use of unlinked self-report data is not an ideal method to measure the effectiveness of an intervention. However, the coherence in the results, showing a clear trend of reduction in the drinking behavior variables, indicates that a cohort design would not reach a contradictory conclusion.

When using binary data, one might lose sensitivity in the analysis. E.g., the proportion of students that have had experience of heavy episodic drinking in the previous month could decrease, while the total number of such episodes becomes higher, due to individuals increasing the number of such drinking occasions. In Paper II, we conducted a sensitivity analysis of our continuous data, and concluded that this was not the case.

There is also a risk of dependent misclassification. For example, there may be students whose parents disapprove of them drinking. As a result, these students may be reluctant to report the fact that they consume large quantities of alcohol. However, since the survey was conducted anonymously, the risk of this kind of misclassification would be reduced. In the multivariable analysis, the odds ratios decreased rather insignificantly in the stepwise regression model, indicating no apparent confounding.

One problematic item in the questionnaires was the variable *heavy episodic drinking*, which was somewhat

altered in the 2003 version. The new wording was to facilitate the understanding of a question considered muddled prior to the change. The change, however, may have led to misclassification. Since the new wording were more to the point and easier to interpret. Another factor that may have had impact on the result of this variable, more than the others, is the time change of the last survey. We cannot exclude the possibility that the new format and the time change affected the answers. On the other hand, the outcomes for the variable *excessive drinking* (Papers II and IV) suggest that the results are valid.

Confounding could represent another source of potential bias in this study. The most serious form of confounding would probably be a general time trend in the change of alcohol consumption patterns in the direction of the kind we observed during the implementation of the intervention. We have investigated this in some detail in Paper II, and found this scenario being rather improbable, since the alcohol consumption patterns remained stable over the studied period, both in Sweden as a whole, as in similar communities in the southern part and in other geographical locations of the country (Stafström *et al.*, 2006).

Another confounding effect that we have not been able to control for in this study is if there has been a general decrease in alcohol-related accidents and violence. We can, however, do a comparison with data collected for Sweden in general (Hvitfeldt *et al.*, 2004 and Andersson *et al.*, 2000). In 1999, 10 % of the 9<sup>th</sup> grade students

had been involved in alcohol-related violence; the same figure in 2003 was 11 %. The same comparison for alcohol-related violence gave the following result: 1999 – 15.5 % and 2003 – 12.5 %. This indicates, at least for alcohol-related violence, that a reduction has occurred. This could also imply that

the change in Trelleborg has been a regression towards the mean, since the levels in 1999 were far above the national figures. On the other hand, the community-based intervention is the only systematic action taken around this time that can explain why this change was initiated.

## CONCLUSIONS

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- The results of this thesis show that community-based interventions have the potential of being an effective strategy to reduce alcohol consumption in adolescence.
- The institutionalization of community-based interventions is dependent, in both the implementation and sustainment processes, on a balance between internal and external input and pressures.
- The risk factors for heavy episodic drinking are gender specific
- A key challenge for a community-based intervention is how it approaches and handles un-planned activities
- The community-based intervention in Trelleborg is likely to have contributed to a reduction in alcohol consumption among adolescents in the municipality
- This reduction was a result of multiple components. Initially, a decrease in the availability of alcohol and positive media coverage had an impact. The fact that different stakeholders within the community had a unified perspective and worked towards a common goal became important later on in the process.
- The analyses support the hypothesis that the reduction in alcohol consumption led to a decrease in alcohol-related accidents and violence within the same age group
- Community-based intervention evaluations require research methods that adapt to an open society, where a community is not a fixed setting.

# POPULÄRVETENSKAPLIG SAMMANFATTNING

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## Att förebygga alkoholkonsumtion bland ungdomar

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Processer och resultat från ett kommunalt alkohol- och drogförebyggande projekt i Trelleborg

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### Bakgrund

Lokalt folkhälsoarbete växte under 1980-talet fram som en metod för att förebygga olika sjukdomstillstånd. I och med att det svenska EU-inträdet försämrades genomslagskraften av de traditionella alkoholpolitiska styrinstrumenten. Detta gjorde att det växte fram ett behov av att finna nya ansatser inom det alkoholförebyggande arbetet. Trelleborg var en av de första kommunerna i Sverige som började arbeta med denna alkohol- och drogförebyggande ansats.

### Syfte

Syftet med denna avhandling är att undersöka vilka konsekvenser, både i form av effekter och processer, som implementeringen av ett lokalt alkohol- och drogförebyggande arbete fick i Trelleborgs kommun 1999-2002.

### Population och metoder

I projektets processutvärdering har de som arbetat aktivt med implementering blivit intervjuade, såväl i grupp som individuellt. Vi har också tagit del av mötesprotokoll och andra anteckningar. När vi analyserade det kvalitativa datamaterialet har vi i huvudsak

använt oss av systemteori – theory of social change och institutionaliserings-teori – för att tolka processerna.

Vi har, i effektstudierna, analyserat svar från skolenkäter. Sådana delades ut vid tre tillfällen under själva implementeringsprojektet, och dessutom en gång efter att det var fullbordat. I analysen av det kvantitativa datamaterialet har vi, utöver vanlig deskriptiv dataanalys, bland annat använt oss av logistisk regressionsanalys och beräkningar av så kallade synergiindex.

### Resultat

Processanalysen visade att projektets möjlighet till att institutionalisera det alkohol- och drogförebyggande arbetet försvårades av en obalans mellan det interna och externa förhållanden, d v s att det fanns påverkan utifrån som inte var överensstämmande med trycket inifrån kommunen. Svårigheten med att institutionalisera frågan innebar också att det fanns en svårighet att hantera oplanerade händelser.

Effektanalysen visade å andra sidan att projektet framgångsrikt bidrog till att minska alkoholkonsumtionen bland

kommunens 15-16-åringar. Detta åstadkoms bland annat på grund av att tillgängligheten av alkohol minskade, men också för att projektet fick stort utrymme i media. Vår analys visade också att antalet elever som rapporterade att de hade varit med om en alkoholrelaterad olycka eller alkoholrelaterat våld minskade. Vi kunde också visa att denna minskning sannolikt hängde ihop med projektet.

Avhandlingen visar att det finns signifikanta skillnader mellan pojkar och flickor, avseende olika riskfaktorer och hur dessa samspelar. Detta får i sin tur konsekvens för hur man kan utforma preventiva insatser.

#### Diskussion och slutsatser

Utvärderingen visade att implementeringen av ett lokalt alkohol- och drog-förebyggande arbete sannolikt bidrog till minskad alkoholkonsumtion bland kommunens ungdomar. Samtidigt visade processutvärderingen att detta skedde trots att det på flera punkter uppstod problem under projektet.

Sammantaget visar studien att lokalt alkoholförebyggande arbete, genom ett ökat medvetande bland befolkningen och riktade insatser, har det förebyggande arbetet bidragit till ett sundare förhållningssätt till alkohol i ungdomsgruppen. Därför är det avhandlingens uppfattning att projektet i Trelleborg, trots sina brister i genomförandet, av allt att döma haft en dämpande effekt på alkoholbruket.

Det finns flera svårigheter med att utvärdera lokala folkhälsoinsatser. De genomförs i ett öppet samhälle, som står under påverkan från flera olika håll. Detta gör att utvärderingsmetodiken måste vara anpassad till denna verklighet. En annan utmaning är att det är lokalsamhället i sin helhet som är föremål för en intervention, inte endast de enskilda individerna. Detta betyder att interventionen syftar till att förändra mer än konsumtionsmönster, utan även hur en kommun utvecklar processer och hur olika intressenter samverkar för att förbättra situationen för lokalsamhällets invånare.



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## **APPENDIX**

## Appendix A

### Interview guides – action group participants

- I. Narrative concerning
  - a. start
  - b. objective
  - c. interventions
  - d. results
  
- II. Choice of target group
  
- III. Decision making process
  - a. manageability (e.g., interventions, finances)
  - b. prioritizing
  - c. initiative
  - d. relation to city policy program
  
- IV. Institutionalization
  - a. How to make the interventions permanent
  - b. Development of the city policy
  
- V. Intervention
  - a. challenges
  - b. solutions
  - c. considerations (who and what)
  - d. anchorage
  - e. mainstreaming or individual interventions, pros and cons

## **Appendix B**

Evaluation seminar – action group participants

The seminar was conducted in several small rooms. The participants fulfilled their assignments while being taped.

### **Assignment I**

Discuss the following:

1. How did you choose your target group?
  - a. Which priorities did you have?
  - b. What other target groups were discussed?
  
2. Describe your decision making process (consensus – majority – minority)
  - a. How was the process established?
  - b. Did anyone in the group take the initiative?
  - c. How have you solved conflict of interest?
  
3. How did you approach the manageability of the intervention?
  - a. Prerequisites
  - b. Limitations
  - c. What made it easier?
  
4. Describe, step-by-step, how your intervention was developed
  
5. Did you discuss to implement any other interventions, if so, why were they discarded?
  
6. From where did the intervention initiatives emanate?
  
7. How did you relate your work in the action group to the city's alcohol and drug policy program?
  - a. How often did you study it in action group meetings?
  - b. Which parts of the program could the group relate to?
  - c. What is your appreciation of the aims listed in the policy?



## Assignment II

Rank the following, based on to what degree each statement was a priority within your group (1 = most prioritized, 2 = less prioritized, 3 = hardly prioritized, 4 = not an issue). You may use two "1", three "2" and "3", and two "4".

\_\_\_\_\_ To reach the target group

\_\_\_\_\_ To realize an idea or concept

\_\_\_\_\_ That you felt that you had a certain knowledge, which needed to be disseminated

\_\_\_\_\_ That the intervention should be able to be implemented using available funds

\_\_\_\_\_ That the intervention should be an investment for the future

\_\_\_\_\_ That the intervention could be developed into a permanent practice

\_\_\_\_\_ That the intervention should be in line with the city's alcohol and drug policy program

\_\_\_\_\_ That the intervention was based on experience

\_\_\_\_\_ That you would receive appreciation from your managers

\_\_\_\_\_ That you would receive appreciation from the general public

### **Assignment 3**

#### *Wishful thinking*

What is your opinion on what you have achieved? How would you like to see your intervention fitted into the ordinary city activities? If you could wish, how have the interventions developed, and how have they influenced the Trelleborg inhabitant three years from now?

### **Assignment 4**

#### *Case study*

[The action group participants were given a fictive case, in which a few of the challenges that had been reported during the Trelleborg project was included. The groups, now a mix between the different sub-groups within the project, had to discuss the highlighted problems and give examples on possible solutions.]