SUSANNA RAINIO

Familial Influences on Adolescence Smoking

Parental smoking, home smoking ban and home-based sourcing of tobacco

ACADEMIC DISSERTATION
To be presented, with the permission of the Faculty of Medicine of the University of Tampere, for public discussion in the Auditorium of Tampere School of Public Health, Medisinarinkatu 3, Tampere, on April 17th, 2009, at 12 o’clock.
CONTENTS

LIST OF ORIGINAL PUBLICATIONS ................................................................. 6

ABBREVIATIONS ......................................................................................... 7

ABSTRACT ..................................................................................................... 8

TIIVISTELMÄ ........................................................................................... 10

INTRODUCTION .......................................................................................... 12

STUDY BACKGROUND ............................................................................ 14

Overview of the Finnish tobacco control policy ........................................ 14
Adolescent smoking as a research topic .................................................. 16
Definitions and measurement of adolescent smoking .............................. 16
The role of surveillance in adolescent tobacco research ....................... 17

REVIEW OF THE LITERATURE .............................................................. 19

Prevalence and trends of adolescent smoking in Finland ........................ 19
Smoking experiments ................................................................................ 19
Daily smoking ............................................................................................ 20
Considerations of smoking trends ............................................................ 20

Familial influences in adolescence smoking ........................................... 21
Smoking behavior of family members .................................................... 21
Home smoking bans ................................................................................ 22
Family structure ....................................................................................... 23
Parental socioeconomic status ............................................................... 24
Other familial influences ...................................................................... 24

Summary of evidence for familial influences ......................................... 25

Other factors influencing adolescent smoking ........................................ 26
AIMS OF THE STUDY ................................................................. 28

MATERIALS AND METHODS ......................................................... 29
Overall description of the studies ............................................................ 29
Literature search (I) .............................................................................. 30
  Literature search strategy ................................................................. 30
  Data exclusion .................................................................................. 30
The Adolescent Health and Lifestyle Survey (II, III, IV) ....................... 31
Study variables .................................................................................. 33
  Measurement of smoking status (II, III, IV) ....................................... 33
  Home smoking ban (III, IV) .............................................................. 34
  Parental permissiveness toward child smoking (III) ......................... 34
  Measurement of tobacco sources (IV) .............................................. 34
  Other variables .............................................................................. 34
Statistical methods (II-IV) ................................................................. 35
Validity and reliability assessment of the AHLS data ......................... 35
  The test-retest study ...................................................................... 35
  Nonresponse analyses .................................................................. 36

SUMMARY OF THE RESULTS .......................................................... 37
Literature review (I) ............................................................................ 37
  Tobacco-specific family factors ....................................................... 37
  Other family factors ...................................................................... 38
  Study frameworks ........................................................................ 38
Changes in family smoking and evolution of the association between
parental and child smoking from 1977 to 2005 (II) ............................... 40
  Family smoking profile .................................................................. 40
  Association of parental and child smoking ...................................... 41
Home smoking bans and the association with child smoking (III) ........ 41
  Prevalence of home smoking bans ................................................ 41
  Associations of home smoking ban with sociodemographic and
tobacco-related factors ................................................................. 41
  Association between home smoking ban and child smoking .......... 41
Home-based sourcing of tobacco (IV) ................................................ 42
  Reported use of home-based sources .......................................... 42
  Factors associated with home-based sourcing ............................... 42
LIST OF ORIGINAL PUBLICATIONS

This doctoral dissertation is based on the following four original publications referred to in the text by their Roman numerals (I-IV):


Publications I, II and III are reprinted with the permission of their copyright holders.
## ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHLS</td>
<td>Adolescent Health and Lifestyle Survey</td>
</tr>
<tr>
<td>CI</td>
<td>Confidence interval</td>
</tr>
<tr>
<td>OR</td>
<td>Odds ratio</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>FCTC</td>
<td>Framework Convention on Tobacco Control</td>
</tr>
<tr>
<td>HBSC</td>
<td>Health Behaviour in School-Aged Children Study</td>
</tr>
<tr>
<td>ESPAD</td>
<td>European School Survey Project on Alcohol and Other Drugs</td>
</tr>
<tr>
<td>GYTS</td>
<td>Global Youth Tobacco Survey</td>
</tr>
<tr>
<td>SES</td>
<td>Socioeconomic status</td>
</tr>
</tbody>
</table>
ABSTRACT

The overall aim of this dissertation was to increase the knowledge and understanding of the role of familial influences in adolescent smoking. This was first examined in the light of the published literature, followed by three separate studies utilizing data from a Finnish nationwide monitoring system of adolescent health and health behaviors, the Adolescent Health and Lifestyle Survey (AHLS). The AHLS is a mailed survey conducted biennially since 1977 among representative samples of 12-18-year-olds.

In the first study (I), the current state of knowledge regarding familial influences on adolescent smoking from international and Finnish studies was reviewed. Parents’ and siblings’ smoking and negligent parental attitude towards smoking emerged as the strongest predictors for smoking initiation and continuation in children. The importance of more common familial influences such as parenting or interactions within the family in shaping adolescents’ smoking behavior has not yet been fully established. However, family structure has been clearly shown to be associated with adolescents’ smoking, being lowest among adolescents living in two biological parent families. The first study further revealed that familial influences on smoking in adolescence have been insufficiently studied in Finland, although the association between parental and child smoking has been well-documented for decades.

Based on eleven cross-sectional surveys using nationally representative samples of 14-18-year-old adolescents, the results from the second study (II) provided unique knowledge for the field of adolescent tobacco research by examining the evolution of the association between parental smoking and child smoking over time (1977-2005). A novel finding was that this association persisted strong and similar between 1977 and 2005. Furthermore, this study explored family smoking trends in the corresponding time period. An important finding was that the proportion of never-smoking families in which neither parents nor child had ever smoked increased substantially from 9% in 1977 to 18% in 2005 while the proportion of smoking families only slightly increased (3.8% vs. 5.5%).

The third study (III) examined home smoking bans and associated family factors, as well as associations of home smoking bans with experimental and daily smoking among the adolescents. A remarkable proportion of 12-18-year old Finns live in homes where no total ban on smoking is in place. The prevalence of total home smoking ban varied according to the sociodemographic characteristics of adolescents’ families. The factors contributed to an increase in the prevalence of total home smoking ban were: having non-smoking parents, having parents with higher education and living in a two biological parent
family. The result further showed that the absence of a total home smoking ban independently contributes to a high likelihood of adolescent daily smoking. A noteworthy finding was that this persisted even when the parents themselves smoked.

In the fourth study (IV), use of home-based sources of tobacco (from parents, from siblings, taking tobacco from home), and associated family factors among adolescent smoking population were investigated. To summarize the main findings from this study, home-based sourcing was fairly common among adolescent daily smokers, although other social sources and commercial sources were mostly used. The majority of the experimental and occasional smokers got their tobacco from other social sources, mostly friends. Of family factors associated with home-based sourcing, parents’ smoking and absence of a home smoking ban increased home-based sourcing among adolescent daily smokers.

As a conclusion, the importance of several family factors in smoking and smoking-related behaviors of adolescents is underscored by this study. Several valuable contributions to the adolescent tobacco research literature and for future research and practice can also be made. According to the main results of this dissertation, being a non-smoking role model, imposing a total ban on smoking in the home and limiting adolescents’ access to tobacco through home-based sources provide invaluable tools for parents in adolescent smoking prevention. Smoking prevention work would benefit from investigating family-focused intervention strategies. The issues that could also be looked further are home smoking policies.
Tämän väitöskirjan tavoitteena oli tutkia eri perhetekijöiden merkitystä nuorten tupakoinnissa tarkastelemalla yleistä kansainvälistä ja suomalaista tutkimusjärjestyttämistä, kartoittavan valta- ja keskustelun perusteltavaa tutkimus 12-18-vuotiaille.


Kolmannessa osatutkimuksessa tarkasteltiin kotien tupakoimattomien, niihin yhteydessä olivat perhetekijöitä sekä niiden yhteyttä lasten tupakoimattomien. Merkittävä osa suomalaisnuorista asuu yli perheissä, joissa tupakoimattomia on rajoitettu vain osittain tai ei lainkaan. Perheen sosioekonomiksi tekijöitä oli
selkeä yhteys kodin tupakointikieltojen asteeeseen. Täydellinen tupakointikielto kotona oli yleisintä, kun lapsen vanhemmilla oli korkea koulutus, vanhemmat olivat tupakoimattomia ja lapsi asui kahden biologisen vanheman perheessä. Tärkein löyös kuitenkin oli, että täydellinen tupakointikielto kodissa vähentää merkittävästi lasten tupakointia verrattuna koteihin, joissa tupakointi on sallittua osittain tai kokonaan. Jopa kodeissa, joissa molemmat vanhemmat olivat tupakoitsijoita, täydellinen tupakointikielto vähensi lasten tupakointia. (III)

Neljännessä osatutkimuksessa tarkasteltiin tupakoivien nuorten (kokeilijat, satunnaisesti tupakoivat, päivittäin tupakoivat) tupakanhankintaa kotiperäisistä lähteistä (vanhemmat, sisarukset, tupakan ottaminen kotoa). Koti havaittiin erityisen tärkeäksi tupakkalähteeksi päivittäin tupakoivien nuorten osalta, kun taas kokeilu- ja satunnaisesti tupakoivien joukossa tupakkaa saatiin yleisimmin muista sosiaalisista lähteistä. Kotiperäisten tupakkalähteiden käyttö oli yleisempiä jos molemmat vanhemmista tupakoivat ja kodissa ei ollut asetettu tupakointia koskevia rajoituksia. (IV)

INTRODUCTION

Tobacco use has been recognized to be a major public health threat worldwide (Frieden and Bloomberg 2007) causing annually about two million premature deaths in Europe alone (Ezzati and Lopez 2003) and 5000 in Finland (Peto et al. 2006). Unless the current trend is reversed, tobacco use will be globally responsible for more than eight million deaths each year by 2030, of which over 80% will occur in the developing countries (WHO 2008). The World Health Organization (WHO) has estimated that approximately 100,000 young people worldwide start smoking every day (WHO Smoking Statistics 2002).

In supporting the fight against the tobacco pandemic WHO has adopted a historically groundbreaking public health treaty called the Framework Convention on Tobacco Control (FCTC) to obligate countries that have signed the FCTC to enact comprehensive measures in the field of tobacco control such as enforce bans on tobacco advertising, promotion and sponsorship, protect people from environmental tobacco smoke, raise tobacco taxes and promote research and information exchange between countries regarding e.g. prevention policies (WHO 2008).

In Finland, the national tobacco control policy has paid attention to the prevention and reduction of adolescent smoking since the 1960s (Rimpelä 1980). The latest goal has been set in the national health policy statement, Health 2015 Public Health Programme, in which the aim is to reduce smoking prevalence among 16-18-year-old to less than 15% by the year 2015 (Government Resolution on the Health 2015 Public Health Programme 2001). The basis of Finnish smoking prevention efforts has been through legislative measures, mass communication and health education in schools. Albeit intensive efforts, smoking prevalence rates among adolescents did not substantially change over past decades until the 2000s when a general downward trend is discernible. However, smoking prevalence rates still remain at unacceptably high level while 25% of 16-18-year-olds still smoke daily (Rimpelä et al. 2007).

Why progress in preventing and reducing smoking among adolescents has been limited remains largely unclear, but a noteworthy gap, however, remains in developing and implementing family-focused strategies. While parents and families have not been at the core in smoking prevention in Finland, it is difficult to determine the potential that parents might have to deter their children from smoking (Patja and Haukkala 2004). Internationally, attention has only recently turned to the role of familial influences in adolescent smoking prevention (Thomas et al. 2007; Petrie et al. 2007; den Exter Blokland 2006; Huver 2006) whereas long-term evidence of familial influences on the prevention of
adolescent alcohol and other drug use has indeed been presented (Merikangas 1990; McGue 1994; Jacob and Johnson 1997).

The overall aim of the present study was to improve the knowledge and understanding of the role of familial influences in adolescent smoking. Throughout this dissertation the terms child, adolescent and youth are used synonymously, and the term tobacco use refers to cigarette smoking, since tobacco use in the form of cigarette smoking is the most common in Finland (Rimpelä et al. 2007). Unless otherwise stated, the term family is here used as the collective term to refer to diverse forms of family constellations.
Overview of the Finnish tobacco control policy

The Ministry of Social Affairs and Health in Finland has been a guiding authority regarding tobacco control policy. A number of institutions and organizations at national level have been funded by the Ministry of Social Affairs and Health to provide tobacco-related information, the key elements including surveillance of tobacco use at the population level and evaluation of various tobacco control programs and policies (see e.g. Rimpelä 1992; Rimpelä and Rainio 2004; Huhtala et al. 2006; Heloma 2003; Rimpelä et al. 2007; Helakorpi 2008a). Preventing and reducing tobacco use among young people has been one of the primary goals of tobacco control policy since the 1960s (Rimpelä 1980). First and foremost, efforts are undertaken in legislative measures, school health education and mass media communication, but measures providing support for smoking cessation among young people have also been under construction (Pennanen et al. 2006). A basis for the current tobacco control policy was created when the first comprehensive health-oriented Tobacco Act, The Act on Measures to Reduce Tobacco Smoking, came into force (Finnish Law 1976). The Tobacco Act has been strengthened and amended gradually with major revisions in 1995 (Finnish Law 1994), and in 2000 (Finnish Law 1999). From June 2007 onwards, the Tobacco Act has prohibited smoking in bars and restaurants to protect workers from environmental tobacco smoke. A summary of the main elements included in the Tobacco Act and its evolution over time is presented in Table 1 (Table 1).
Table 1. Main elements of the Finnish tobacco legislation from 1977 to 2007.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(The Act on Measures to Reduce Smoking, called Tobacco Act; issued in August 1976)</td>
<td>(Amendment to the Tobacco Act; issued in August 1994)</td>
<td>(Amendment to the Tobacco Act; issued in April 1999)</td>
<td>(Amendment to the Tobacco Act; issued in July 2006)</td>
</tr>
<tr>
<td><strong>Smoking restrictions:</strong></td>
<td><strong>Smoking restrictions:</strong></td>
<td><strong>Smoking restrictions:</strong></td>
<td><strong>Smoking restrictions:</strong></td>
</tr>
<tr>
<td>Smoking was prohibited in the indoor premises of i day-care centres i schools i government agencies and comparable public bodies i public events arranged indoors i public transportation</td>
<td>Smoking was further restricted i in workplaces (excluding bars and restaurants) i in all public means of transport and in all public events</td>
<td>Smoking was prohibited i inside bars, restaurants and corresponding establishments - stepwise implementation within three years</td>
<td>Concerning restaurants and bars, setting up a special smoking room is allowed. For those bars and restaurants that have already arranged their smoking areas so that tobacco smoke does not spread to smoke-free areas, there is a two-year transition period. The law will come into force in June 2009.</td>
</tr>
<tr>
<td><strong>Other:</strong></td>
<td><strong>Other:</strong></td>
<td><strong>Other:</strong></td>
<td><strong>Other:</strong></td>
</tr>
<tr>
<td>i age limit for the ban on sales of tobacco to under 16 years i prohibition on advertising of tobacco products i compulsory health warnings and content labeling on tobacco packages i upper limits of harmful substances</td>
<td>i age limit for sales of tobacco was raised to 18 years of age i sale of oral snuff was prohibited i prohibition of all modern forms of tobacco sales promotion and indirect advertising</td>
<td>i environmental tobacco smoke was classified as a carcinogen i compulsory self-plan of action for controlling tobacco sales</td>
<td></td>
</tr>
</tbody>
</table>

Source: Finnish law (www.finlex.fi/laki)
Adolescent smoking as a research topic

Definitions and measurement of adolescent smoking

There is no uniform definition or measure of adolescent smoking. Traditionally, adolescent smoking has been described to develop through different stages of smoking (Leventhal and Cleary 1980). In a review of Mayhew and colleagues (Mayhew et al. 2000), adoption of smoking is described to occur through a series of progressive stages from very early initiation to regular use and finally, establishing dependence on tobacco - a stage in which quitting smoking is difficult. It has been recognized that early symptoms of nicotine dependence can occur very rapidly, even within the first weeks of smoking initiation (Colby et al. 2000; DiFranza et al. 2000, 2007). In the research literature, a number of social and individual factors have been identified to contribute to the progression and speed from lower levels to higher levels of tobacco use (Mayhew et al. 2000). Moreover, it has been recognized that predictors associated with smoking initiation differ from those of the progressive stages of smoking (Robinson et al. 2006).

In contrast to the theories on processes of adolescent smoking, some researchers, however, argue that the nature of smoking onset is largely unplanned, meaning that no conscious decisions to smoke in the future are made (Rimpelä 1980; Kremers et al. 2004). Also in a review study by Eissenberg and Balster, it is argued that the current knowledge base about initial tobacco use episodes among adolescents is still weak, while most of the research has focused on those who are established smokers (Eissenberg and Balster 2000).

In the adolescent smoking research literature, patterns of smoking have been described by various terms including experimental smoking, occasional smoking, regular smoking and current/daily smoking. In most adolescent smoking surveys, smoking experiments have usually been elicited with a question on whether the adolescent has ever tried tobacco while daily smoking is typically measured by a combination of several questions concerning frequency of smoking and number of cigarettes smoked in a certain space of time such as the past 30 days (Delnevo et al. 2004; Rimpelä et al. 2007; Johnston et al. 2008). In this dissertation, tobacco experimenters had smoked at least one cigarette in their lifetime. The definition of daily smoking was based on four separate questions.

Large-scale surveys of adolescent smoking have generally used self-reports to assess smoking status. Self-reports have been found to be accurate and concur with biochemical indices (Patrick et al. 1994; Post et al. 2005; Vartiainen et al. 2007).
Since the smoking measures and definitions vary greatly across studies, comparison of the smoking prevalence rates is not straightforward (van der Wilk and Jensen 2005).

**The role of surveillance in adolescent tobacco research**

To monitor trends of tobacco use, tobacco-related behaviors and issues, and to evaluate tobacco control policies and programs, systematic and continuous surveillance systems are a core area of tobacco research in several countries (Bauman and Phongsavan 1999). The surveillance systems are also recognized by the WHO as essential tools in the fight against the tobacco pandemic (WHO 2008). No data systems is without weaknesses, thus large-scale surveys have tended to carefully evaluate and report their methodology to improve the quality of the data and to respond to the challenges related to surveillance in general (Rimpelä et al. 2007; Brener et al. 2004).

In Finland, there are two national systems that monitor adolescent tobacco use regularly. The Adolescent Health and Lifestyle Survey (AHLS), originally developed to follow the effects of the 1977 Tobacco Act, has monitored adolescent health and health behaviors, such as tobacco use every other year via mailed surveys among 12-18-year-olds since 1977 (Rimpelä et al. 2007). The School Health Promotion Study is a classroom survey launched in 1995 (School Health Promotion Study 2008). The data is gathered from all 8th and 9th grades of secondary schools and 1st and 2nd grades of upper secondary and vocational schools. Thus, the age range of the respondents is 14 to 20 years. The data is gathered so that in even-numbered years the provinces of Southern Finland, Eastern Finland and Lapland are included, and in odd-numbered years the provinces of Western Finland, Oulu and Åland (Luopa et al. 2005). Although gathered by different data collection methods, similar trends in adolescent smoking have been discernible over time (Rimpelä et al. 2007).

Regarding cross-national databases, Finland has been a participating country in two research projects: The Health Behaviour in School-Aged Children study (HBSC) conducted at four-year intervals since the beginning of the 1980s and targeting the age groups 11, 13 and 15 years (Currie et al. 2004); and the European School Survey Project on Alcohol and Other Drugs (ESPAD) also conducted every four years since 1995 with a target population consisting of 16-year-old students (Hibell et al. 2004). Both these surveys have provided comparative data on adolescent smoking from several countries, although the number of smoking-related questions has been very limited in both surveys.

In the USA, Monitoring the Future is a long-term study monitoring smoking of adolescents aged 13 to 18 years every year covering for over 30 years already (Johnston et al. 2008). Another example of extensive data systems on adolescents’ tobacco related issues in the USA is the Youth Risk Behavior Surveillance System, conducted since 1991 among 14-15 through 17-18 year-old students (Brener et al. 2004). In Canada, the Youth Smoking Survey has
provided regular data on young people’s (aged 10-14 and 15-19 years) smoking rates and other tobacco related issues since 1994 (Statistics Canada 2005). Internationally, the Global Youth Tobacco Survey (GYTS), a school-based survey of students aged 13-15 years, collects data using a standardized methodology and questionnaire worldwide from six territories including the African Region, the Region of the Americas, the Eastern Mediterranean Region, the European Region, the South-East Asia Region and the Western Pacific Region (Global Youth Tobacco Survey Collaborative Group 2002).
REVIEW OF THE LITERATURE

Prevalence and trends of adolescent smoking in Finland

Smoking experiments

Given the period from 1977 to 2007 in the AHLS data, three major findings concerning smoking experiments can be observed. First, the age of smoking experimenters has become older. The proportions of experimenters have declined a great deal during that time period; the greatest decline was seen among the 12-year-olds; among boys from 50% to 16%, and in the same age girls from 32% to 9% (Fig 1). Second, the gender differences are nowadays minimal, except for 12-year-old boys, who generally report smoking experiments more frequently than girls. Third, the proportion of 18-year-olds who have tried tobacco has remained fairly stable over time. Likewise, the proportion of 18-year-olds who have never tried tobacco has not changed (Rimpelä et al. 2007).

**Daily smoking**

There are two major findings concerning daily smoking rates in the period of interest (1977-2007). First, the overall changes have been inconsistent over time, although a positive development in daily smoking rates has been seen in recent years (Fig 2). Approximately one-fourth of 16-18-year-olds smoke cigarettes daily (Rimpelä et al. 2007). Daily smoking rates among 18-year-old boys have remained fairly stable, particularly since the beginning of the 1980s, while among 12-year-olds daily smoking has remained very rare. Second, gender differences in daily smoking have nearly disappeared; girls nowadays even have slightly higher rates than the boys at the age of 14 and 16 years (Rimpelä et al. 2007).

![Daily smoking, boys](image1)

![Daily smoking, girls](image2)


**Considerations of smoking trends**

Daily smoking prevalence as well as experimenting among Finnish adolescents has been reported to be declining since the beginning of the new millennium. This finding corroborates another nationally representative study, the School Health Promotion Study (School Health Promotion Study 2008). Although collected by different methods, fairly similar prevalence estimates of experimental and daily smoking have been produced (Rimpelä et al. 2007).

It should be remembered that when examining cigarette smoking only, the decreasing trend among boys is likely more favorable as it is considerably more common for boys than girls to use snuff (Haukkala et al. 2006; Rimpelä et al. 2007). Moreover, it was found that the proportion of smoking experimenters has declined in all age groups except the 18-year-olds. This means that most adolescents have this experience but it occurs nowadays later than before.
The trends examined above focused on the national level. However, it is worth mentioning that Finland is not the only country where the smoking prevalence among adolescents has been declining. In an international comparison, smoking is also declining in several European countries such as in Sweden and in the United Kingdom (Hublet et al. 2006; Hibell et al. 2004; Sandford 2008), in the USA (Johnston et al. 2008) and Canada (Statistics Canada 2005).

A possible explanation for the recent favorable development observed in smoking among the Finnish adolescent population is highlighted by several factors including tobacco-specific actions, mostly outlined at the national level such as changes in smoking-related norms and practices in schools and youth-specific explanations, probably associated with the changing youth culture (Rimpelä et al. 2005). Taking into consideration the recent declining smoking trends among the adolescent population, it is possible that in the near future smoking among young adults will also decline. Some evidence of this development has been found in the age group 15-24 years in a health behavior survey of the Finnish adult population (Helakorpi et al. 2008b) but only future surveys will show whether smoking is really also beginning to decline in the early stages of adult life. Today, approximately one quarter of the adult population (30% of men, 20% of women) are daily smokers (Helakorpi et al. 2008b).

Familial influences in adolescence smoking

*Smoking behavior of family members*

Within a family, a strong association of both parents’ and older siblings’ smoking with child’s smoking initiation and regular smoking has been documented in a large number of cross-sectional as well as in longitudinal studies (Vink et al. 2003; Avenevoli and Merikangas 2003; Rajan et al. 2003; Bricker et al. 2006; Otten et al. 2007). Longitudinal research has also emphasized the importance of parents’ and older siblings’ smoking in children’s smoking transitions (Bricker et al. 2006). Conversely, parental smoking cessation appears to be a protective factor since it seems to reduce the risk of child smoking initiation (Bricker et al. 2005; den Exter Blokland et al. 2004).

The risk for child smoking increases as the number of smoking role models increases in the child’s immediate environment (Taylor et al. 2004). Maternal smoking has been shown to increases the risk for child smoking more than paternal smoking (Kandel and Wu 1995; Chassin et al. 1998; Distefan et al. 1998; Griffin et al. 1999; Rosendahl et al. 2003; de Vries et al. 2003) and concerning a gender specific transmission, maternal smoking has been associated more strongly with smoking among daughters than sons (Kestilä et al. 2006; Ashley et al. 2008). According to recent results from the United Kingdom
smoking in a step-parent is as influential as smoking by biological parents (Fidler et al. 2008) suggesting that step-parents’ smoking behavior also plays a role in adolescent smoking.

The influence of older siblings’ smoking has been less studied but their influence has been found to be substantial in adolescence, too (Avenevoli and Merikangas 2003; Rajan et al. 2003; Hibell et al. 2004, von Bothmer et al. 2002). In a longitudinal trial with a nine-year prediction to look at the influence of older siblings’ smoking on children’s daily smoking, Rajan and colleagues (Rajan et al. 2003) concluded that the influence appeared to be similar in families comprised of both smoking and non-smoking parents.

Some studies have emphasized the influence of the family on the child’s friends’ selection processes. Children from smoking families are more likely to choose smoking friends (Engels et al. 2004).

The association between parental and older siblings’ smoking and child smoking can be mostly explained by modeling of the family members’ smoking habit. Indeed, increased availability of cigarettes at home, with or without permission, also has some role. Although access to cigarettes at home, for example, has been associated with increased monthly smoking among adolescents (Komro et al. 2003), detailed evidence concerning adolescent acquisition of cigarettes from various home-based sources has so far been scarce, and population based information has not been available before the present study. Moreover, although the literature on associations between parents’ and the child’s smoking have been well-established, some areas have still been neglected. The stability of this association over time, for example, has not been established before the present study (II). Moreover, it is unclear, for example, at which age of the child parental and sibling’s smoking have the greatest impact. Understanding of the reciprocal influences between parents and children also deserves further investigation (Huver 2006).

**Home smoking bans**

Although health hazards related to environmental tobacco smoke exposure are largely acknowledged (Surgeon General Report 2006) and comprehensive legislation against smoking has been enacted in several countries (Lantz et al. 2000; Stead and Lancaster 2005), less emphasis has been placed on smoking bans and restrictions in private homes. On the other hand, the GYTS data collected during the period 2000-2007 revealed that approximately 44% of students aged 13-15 years worldwide are exposed to tobacco smoke at home (Warren et al. 2008). Correspondingly, according to a Canadian follow-up study, exposure to environmental tobacco smoke in childhood is related to subsequent smoking in adolescence, even after adjustment for several confounding factors such as gender and socioeconomic status of parents (Becklake et al. 2005).

In cross-sectional study settings, a smoke-free home has been shown to decrease the likelihood of adolescent smoking (Farkas et al. 1999, 2000; Proescholdbell et al. 2000; Wakefield et al. 2000; Pizacani et al. 2004; Darling 2000).
and Reeder 2003; Bernat et al. 2008). According to evidence from a survey of students aged 12 to 17 years in the Australian State of Victoria, the authors interestingly revealed that when a total ban on smoking in the home is imposed, it can influence children’s smoking positively regardless of smoking among their friends, meaning that some of the influence of friends’ smoking is reduced (Szabo et al. 2006). In a recent study by Luther and colleagues (Luther et al. 2008), when adolescents were allowed to smoke at home, both cigarette consumption and measured dependence levels were affected given that a larger number of cigarettes per day was smoked and higher scores on the Fagerström Test of Nicotine Dependence (Heatherton et al. 1991) were reported compared to those not allowed to smoke at home.

Differences exist in the degree of home smoking bans imposed in relation to family factors so that home smoking bans are more often enforced in families in which both parents have higher level of education, do not smoke and are both the child’s biological parents (Merom and Rissel 2001; Pizacani et al. 2003).

Overall, research experience in this topic is relatively new and the results achieved from cross-sectional studies need confirmation from longitudinal research. In Finland, population-based information regarding home smoking bans is lacking. Given the fact that smoke-free public environments are nowadays the norm, and enjoying wide acceptance by the public in Finland (see e.g. Rimpelä et al. 2005), it can be expected that smoking restrictions are broadly adopted in most Finnish homes. The present study filled the research gap by investigating this area.

**Family structure**

Adolescents living with both biological parents have been shown to be at reduced risk of smoking compared to adolescents living in single-parent or reconstituted families (Isohanni et al. 1991; Patton et al. 1998a; Bjarnason et al. 2003; Griesbach et al. 2003; Otten et al. 2007; Fidler et al. 2008). Interestingly, this association has been found to be very consistent across countries (Bjarnason et al. 2003; Darling and Cumsille 2003). In a Finnish study by Kestilä and colleagues, this association was also seen to persist from childhood to early adulthood (Kestilä et al. 2006).

Several possible mechanisms could explain how family structure causes smoking. The association is most likely explained through shared norms, behaviors and attitudes within the family. Moreover, when the child lives primarily with one parent, the other parent may be less involved. For example, there is evidence that adolescents who are more involved with their non-resident fathers are less likely to begin smoking regularly (Menning 2006).
Parental socioeconomic status

The relationship between parental SES and adolescent smoking has been widely studied but the results appear to be somewhat inconclusive. Generally, an inverse association between parental SES and adolescent smoking has been reported (Conrad et al. 1992; Tyas and Pederson 1998). On the other hand, comparatively large numbers of studies have found no significant association between parental SES and adolescent smoking (Thorlindsson and Viljalmssson 1991; Glendinning et al. 1994; Tuinstra et al. 1998; Yorulmaz et al. 2002; Paavola et al. 2004). One cross-cultural comparison study between 15-year-olds in Glasgow and Helsinki looked for evidence of a relationship between lifestyles and social class (as defined by father’s occupation) in adolescent smoking. In both locations, a strong link between involvement in peer-oriented lifestyle and social class (working class) was found which, in turn, was also strongly related to smoking (Karvonen et al. 2001).

The mechanisms underlying the relationship between low parental SES and adolescent smoking are not fully established, although parental smoking and household income, for example, have been recognized to be important mediators (Soteriades and DiFranza 2003). Inconsistent results across studies may reflect not only different SES indicators but also socio-cultural differences (Yorulmaz et al. 2002) leading to the conclusion that SES and ethnicity should not be examined in isolation (Scarinci et al. 2002).

Other familial influences

In the following, a brief overview of other familial influences found to be important but not examined by this study is given.

Twin and family studies have demonstrated a genetic contribution to smoking behavior, which is partly due to shared genetic vulnerability in smoking and nicotine dependence, and partly due to social learning and other shared family environmental influences (Sullivan and Kendler 1999; Madden and Heath 2002; Rose et al. 2003). In her dissertation, Broms suggest that a better understanding of the roles and interactions of environmental and genetic factors in nicotine dependence would likely help to prevent smoking, too (Broms 2008).

The quality of the parent-child relationship has been associated with smoking given that poor parent-child relationship is associated with higher levels of smoking (Tyas and Pederson 1998) while supportive and positive parent-child relationship protects children from smoking (Chassin et al. 1998; Cohen et al. 1994; Harakeh et al. 2004).

Positive communication between parent and child has also been found to be protective against the progression from experimentation to established smoking (Distefan et al. 1998). On the other hand, Ennett and colleagues found that parental-child communication was protective against child smoking only if
parents’ own smoking behavior was in line with their articulated rules (Ennett et al. 2001).

The literature examining parenting styles suggests inconsistent and punitive parenting to be related to increased likelihood of the child smoking (Pulkkinen 1983; Fleming et al. 2002). Authoritative parenting has been shown to be positively associated with current smoking among high school students while both permissive and autocratic parenting styles were found to be equal in relation to the likelihood of current smoking (Castrucci and Gerlach 2006).

Greater parental control including monitoring of children’s whereabouts (Cohen et al. 1994; Cohen and Rice 1995; Hill et al. 2005, Blokland et al. 2007), and parental expectations against adolescent smoking (Simons-Morton 2004) have been found to protect young people from smoking. It has been also shown that a deficit of common family time is related to an increase in smoking initiation among children (Garmiene et al. 2006).

In the adolescent smoking research literature, the term anti-smoking socialization describes broad range of tobacco-related practices adopted by parents to influence the child against smoking. Anti-smoking socialization includes aspects from attitudes and behavioral norms against smoking to smoking specific discussions with children, rule-setting and monitoring (Jackson and Henriksen 1997; Henriksen and Jackson 1998; Griffin et al. 1999; Sargent and Dalton 2001; Andersen et al. 2002, Engels and Willemsen 2004). Anti-smoking parenting practices have shown to significantly reduce smoking initiation (Jackson and Henriksen 1997) as well as adolescent regular smoking (Andersen et al. 2004). Results from a 3-year intervention evaluation from the USA also confirmed that children who receive antismoking socialization from their parents are less likely to initiate smoking and this is true even if the parents smoke (Jackson and Dickinson 2006). Although it has been shown that anti-smoking socialization protects children from smoking, parents are rarely engaged in this kind of socialization (Henriksen and Jackson 1998; Fearnow et al. 1998).

Summary of evidence for familial influences

To sum up, protective factors have not received similar attention in the academic research than have risk factors, which have been extensively investigated in a variety of settings. Understanding the mechanisms through which a family may either increases the risk of child smoking initiation and continuation or protect the child from smoking are often complex. Efforts to describe the mechanisms behind the several relationships found between familial influences and adolescents’ smoking are most often explained by factors such as social modeling of parental behavior, availability of cigarettes at home, genetic susceptibility, as well as shared family lifestyle and living conditions.

Of the several familial influences described in this chapter, the most extensively researched are the association between parental smoking and child
smoking as well as parental SES and child smoking. There is far less information about smoking-related rules and practices adopted in homes and their impact on children’s smoking. It seems reasonable to conclude that inconsistencies between research findings may reflect not only methodological disparities but also the nature of adolescent smoking (unstable, transitional), the complexity of today’s families and diverse sociocultural characteristics (Darling and Cumsille 2003; Avenevoli and Merikangas 2003).

Other factors influencing adolescent smoking

In addition to familial influences, a complex set of other socio-environmental and individual factors have been identified to be associated with the increased risk of both initiation and continuation of adolescent smoking (Conrad et al. 1992; Surgeon General Report 1994; Tyas and Pederson 1998; Mayhew et al. 2000; Turner et al. 2004).

Age is a key factor as smoking is primarily established during adolescence before the age of 18 years (Reid et al. 1995; Stead et al. 1996). In the Finnish context, the smoking initiation process begins early in life: experimentation with cigarettes can be recognized as early as age 11 or 12 (Rimpelä et al. 2005).

Gender differences in smoking have been minimal in most Western countries (Tyas and Pederson 1998, Warren et al. 2006; Rimpelä et al. 2007), although in some Eastern countries, boys have higher daily smoking prevalence rates than girls (Hibell et al. 2004; Hublet et al. 2006).

The prevalence of smoking has been shown to vary by ethnicity. The ethnic background has been associated with smoking so that white adolescent population have higher smoking rates than adolescents from Asian or other ethnic background (Anderson and Burns 2000; Scarinci et al. 2002).

Regarding urbanization level of the place of residence, a study from the USA, based on the large dataset from the Youth Risk Behavior Surveillance indicated that rural residency is a risk factor for tobacco use among young people (Lutfiyya et al. 2008). Otherwise, inconclusive results have been reported (Tyas and Pederson 1998). Among adults, for example, higher smoking prevalence in urban than non-urban areas has been reported (Idris et al. 2007).

Psychological studies have revealed a number of certain personality and behavioral factors to predict smoking behavior. In a prospective study by Burt and colleagues (Burt et al. 2000), a wide range of behavioral characteristics was examined, of which the most significant predicting adolescents’ daily smoking were rebelliousness and risk-taking behavior. Other factors found to be associated with a higher risk of smoking among adolescents include problems at school (Simons-Morton et al. 1999), poor school performance (van den Bree et al. 2004), low self-esteem (Glendinning and Inglis 1999), depressive and anxiety symptoms (Covey and Tam 1990; Patton et al. 1998b), inattentiveness (Barman et al. 2004), and stressful life events (Siqueira et al. 2000).
Some available studies have evaluated the influence of timing of biological and social maturation on tobacco use in adolescence. In one cohort study of 5,863 adolescents aged 11 to 12 years with a follow-up of five years in the United Kingdom, it was reported that early-maturing adolescents are at increased risk for smoking and other unhealthy behaviors (van Jaarsveld et al. 2007). A relationship between dating and smoking uptake among English schoolchildren has also been found - being an early “dater” strongly predicts smoking uptake, particularly among girls (Fidler et al. 2006).

Research has very consistently shown that besides smoking family members, smoking friends and peers are among the main predictors of smoking initiation in adolescence (Conrad et al. 1992; Tyas and Pederson 1998; Mayhew et al. 2000; Schepis and Rao 2005). By examining 6,900 adolescents aged 14 to 18, Wang and colleagues (Wang et al. 1995) found that the strongest predictor for adolescent smoking was smoking in the best friend. Importantly, this result has later been confirmed in several studies (for a review see Tyas and Pederson 1998; Mayhew et al. 2000). Friends’ attitudes towards smoking also matter. With friends with a permissive and approving attitude towards smoking, the likelihood of both smoking uptake as well as of becoming an established smoker is greater than among those adolescents having friends with negative attitude towards smoking (Flay et al. 1998; Griffin et al. 1999).

School characterized by a strict no-smoking culture and policies including smoking bans has been shown to be associated with reduced levels of daily smoking among young people (Aveyard et al. 2004a, 2004b; Schnohr et al. 2008).

Taking into account the broader societal level influences, evidence from several cross-sectional and longitudinal studies has provided support for the associations between advertising and other promotional strategies of tobacco products and youth smoking increasing the likelihood of both smoking initiation and continuation (Rimpelä et al. 1993; Lovato et al. 2003). The pricing policy of cigarettes has also been shown to have a powerful effect on adolescents’ smoking, high cigarette prices discouraging youth from smoking (Liang et al. 2003). Instead, implementation of other tobacco control policies, such as laws on selling have been considered successful only in reducing minors’ purchases from commercial sources but not necessarily in reducing smoking prevalence (Rimpelä and Rainio 2004; Fichtenberg and Glantz 2002).
AIMS OF THE STUDY

The overall aim of this dissertation was to increase the knowledge and understanding of the role of familial influences in adolescence smoking. The specific objectives of the study were as follows:

1) To conduct a literature review of the current state of knowledge regarding familial influences related to adolescent smoking from the international literature, and to identify Finnish literature published in this area (I)
2) To describe the trends in family smoking, and to examine the evolution of the association between parental and child smoking over four decades (1977-2005) (II)
3) To study home smoking bans, their association with sociodemographic and tobacco-related factors in the family, and with child smoking (III)
4) To study the use of home-based sources of tobacco, and associated family factors among adolescent smoking population (IV)
MATERIALS AND METHODS

Overall description of the studies

The present study is based on two types of data sets. The first data was drawn from literature review concerning familial influences on adolescent smoking (I). The second were drawn from the Adolescent Health and Lifestyle Survey (AHLS) (II, III, IV), which is a nationwide monitoring system of adolescence health and health-related behaviors in Finland. Table 2 presents the outline of Studies I-IV. Below, detailed information is provided.

Table 2. Overview of data sources, study subjects, main outcome measures and study methods used in Studies I-IV.

<table>
<thead>
<tr>
<th>Study</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data source</td>
<td>Literature review</td>
<td>AHLS</td>
<td>AHLS</td>
<td>AHLS</td>
</tr>
<tr>
<td></td>
<td>Finnish literature (1962-2004)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study subjects</td>
<td>10-19-year olds</td>
<td>14-18-year olds n=58,279</td>
<td>12-18-year olds n=6,503</td>
<td>14-16-year olds n=5,826</td>
</tr>
<tr>
<td>Main measures</td>
<td>Familial influences in adolescence smoking</td>
<td>Parental smoking, child smoking</td>
<td>Home smoking ban, child smoking</td>
<td>Home-based sourcing of tobacco</td>
</tr>
<tr>
<td>Study methods</td>
<td>Literature search (PubMed, PsycInfo, Cochrane Database of Systematic Reviews, Web of Science, LINDA, ARTO)</td>
<td>Multinomial logistic regression analysis</td>
<td>Multinomial logistic regression analysis</td>
<td>Binary logistic regression analysis</td>
</tr>
</tbody>
</table>

\(^{a}\) excluding study years 1981, 1983, 1989, and 2003 for which information regarding parental smoking was not included in the questionnaire
Literature search (I)

Literature search strategy

A computerized literature search was conducted in order to collect the evidence of familial influences on adolescents’ (defined here as age range from 10 to 19 years) smoking initiation and continuation. An international literature search was made through four electronic databases including PubMed, PsycInfo, the Cochrane Database of Systematic Reviews, and Web of Science. Based on the authors’ consensus, the following search terms or stems were chosen: “smoking”, “child”, “adolescent”, “parent”, “family”, “family structure”, “home”. A similar search of the national literature was performed using the electronic reference databases of Finnish Universities (LINDA, ARTO). In the first stage, articles were selected if the title and/or abstract contained data that might be relevant to the study question, and when the study sample included subjects of the intended age of interest. In the second stage, a copy of all articles identified was obtained and their content was reviewed, after which the reference lists of each of the articles identified were also examined to find additional publications.

Data exclusion

The international literature search was limited to articles written in English, and the search period was restricted from 2000 (January) to 2005 (September) except for the cited reviews which were used regardless of the publication year. Due to the scarcity of Finnish studies, it was decided in this search to include all possible studies published. The earliest appeared in 1962 from which year onwards all studies were identified. The latest publication searched at that time was found from 2004. After the initial limitations, data were further restricted as follows: Family intervention studies and studies concerning ethnicity were excluded. Due to the large number of studies on the association of SES of parents with adolescent smoking, all SES indicators other than family structure were excluded.
The Adolescent Health and Lifestyle Survey (II, III, IV)

Three studies (II, III, IV) utilized data from the Adolescent Health and Lifestyle Survey (AHLS). The AHLS has monitored a wide range of health and health-related behaviors in the Finnish adolescent population by biennial mail surveys with a repeated cross-sectional study design since 1977. Ethical approval for the AHLS was obtained from the Ethical Committees of the University of Helsinki, Department of Public Health, and the Pirkanmaa Hospital District, Finland.

A structured 12-page questionnaire was mailed to nationally representative samples of 12, 14, 16 and 18-year-olds every other year in February-April. The nationally representative samples were obtained from the Population Register Centre based on particular dates of birth, so that all adolescents born on the sample days are included. The mean ages of respondents have remained the same throughout the study years (12.6, 14.6, 16.6 and 18.6 years). Non-respondents were reminded twice. A minor change in the data collection method was made in 2007 when a third reminder was sent in which the non-respondents were given the option to participate via the Internet. Otherwise, to ensure the comparability of data over time, the sample selection, data collection methods, the length of the questionnaire and time of surveys have been kept largely unchanged.

Responding to the self-administered questionnaire has been voluntary and the purpose of the study has been explained on the cover page of questionnaire. Table 3 shows the number of respondents and response rates (%) in the AHLS in 1977-2007 by age, gender and survey year. Overall, the response rates have been declining over time, the decline being greater in boys than in girls (Table 3).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbers of respondents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td></td>
<td>12</td>
<td>369</td>
<td>491</td>
<td>483</td>
<td>450</td>
<td>353</td>
<td>414</td>
<td>406</td>
<td>426</td>
<td>399</td>
<td>395</td>
<td>427</td>
<td>442</td>
<td>351</td>
<td>368</td>
<td>395</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14</td>
<td>345</td>
<td>565</td>
<td>488</td>
<td>429</td>
<td>395</td>
<td>1128</td>
<td>361</td>
<td>1196</td>
<td>1203</td>
<td>1177</td>
<td>1168</td>
<td>1187</td>
<td>1251</td>
<td>1092</td>
<td>1092</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
<td>386</td>
<td>528</td>
<td>535</td>
<td>413</td>
<td>452</td>
<td>1183</td>
<td>362</td>
<td>1008</td>
<td>1168</td>
<td>1232</td>
<td>1126</td>
<td>1110</td>
<td>892</td>
<td>1003</td>
<td>806</td>
</tr>
<tr>
<td></td>
<td></td>
<td>18</td>
<td>347</td>
<td>523</td>
<td>519</td>
<td>489</td>
<td>401</td>
<td>1134</td>
<td>328</td>
<td>893</td>
<td>1029</td>
<td>1071</td>
<td>1088</td>
<td>1112</td>
<td>774</td>
<td>570</td>
<td>681</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1447</td>
<td>2107</td>
<td>2025</td>
<td>1781</td>
<td>1601</td>
<td>3859</td>
<td>1457</td>
<td>3523</td>
<td>3799</td>
<td>3875</td>
<td>3809</td>
<td>3851</td>
<td>3268</td>
<td>3033</td>
<td>2974</td>
<td>2467</td>
</tr>
<tr>
<td>Girls</td>
<td></td>
<td>12</td>
<td>341</td>
<td>540</td>
<td>514</td>
<td>440</td>
<td>359</td>
<td>367</td>
<td>430</td>
<td>399</td>
<td>437</td>
<td>424</td>
<td>440</td>
<td>407</td>
<td>425</td>
<td>390</td>
<td>418</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14</td>
<td>367</td>
<td>535</td>
<td>548</td>
<td>482</td>
<td>433</td>
<td>1202</td>
<td>431</td>
<td>1337</td>
<td>1299</td>
<td>1301</td>
<td>1347</td>
<td>1313</td>
<td>1485</td>
<td>1245</td>
<td>1189</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
<td>347</td>
<td>579</td>
<td>529</td>
<td>509</td>
<td>497</td>
<td>1284</td>
<td>380</td>
<td>1272</td>
<td>1389</td>
<td>1469</td>
<td>1379</td>
<td>1333</td>
<td>1138</td>
<td>1296</td>
<td>985</td>
</tr>
<tr>
<td></td>
<td></td>
<td>18</td>
<td>330</td>
<td>512</td>
<td>524</td>
<td>509</td>
<td>463</td>
<td>1401</td>
<td>407</td>
<td>1103</td>
<td>1285</td>
<td>1313</td>
<td>1415</td>
<td>1315</td>
<td>976</td>
<td>797</td>
<td>937</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1385</td>
<td>2166</td>
<td>2115</td>
<td>1940</td>
<td>1752</td>
<td>4254</td>
<td>1648</td>
<td>4111</td>
<td>4390</td>
<td>4507</td>
<td>4581</td>
<td>4368</td>
<td>4024</td>
<td>3728</td>
<td>3529</td>
<td>3373</td>
</tr>
<tr>
<td>All total</td>
<td></td>
<td>2832</td>
<td>4273</td>
<td>4140</td>
<td>3721</td>
<td>3353</td>
<td>8113</td>
<td>3105</td>
<td>7634</td>
<td>8189</td>
<td>8382</td>
<td>8390</td>
<td>8219</td>
<td>7292</td>
<td>6761</td>
<td>6503</td>
<td>5840</td>
</tr>
<tr>
<td>Response rates</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td></td>
<td>12</td>
<td>90</td>
<td>88</td>
<td>88</td>
<td>85</td>
<td>80</td>
<td>81</td>
<td>76</td>
<td>77</td>
<td>73</td>
<td>78</td>
<td>76</td>
<td>79</td>
<td>72</td>
<td>69</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14</td>
<td>88</td>
<td>86</td>
<td>87</td>
<td>78</td>
<td>74</td>
<td>81</td>
<td>75</td>
<td>74</td>
<td>74</td>
<td>75</td>
<td>69</td>
<td>74</td>
<td>66</td>
<td>66</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
<td>85</td>
<td>83</td>
<td>85</td>
<td>75</td>
<td>76</td>
<td>77</td>
<td>70</td>
<td>68</td>
<td>70</td>
<td>72</td>
<td>68</td>
<td>68</td>
<td>62</td>
<td>62</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td></td>
<td>18</td>
<td>83</td>
<td>78</td>
<td>81</td>
<td>75</td>
<td>68</td>
<td>69</td>
<td>63</td>
<td>31</td>
<td>66</td>
<td>67</td>
<td>60</td>
<td>63</td>
<td>53</td>
<td>50</td>
<td>49</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>86</td>
<td>83</td>
<td>85</td>
<td>78</td>
<td>74</td>
<td>76</td>
<td>71</td>
<td>69</td>
<td>70</td>
<td>72</td>
<td>67</td>
<td>69</td>
<td>62</td>
<td>60</td>
<td>58</td>
<td>50</td>
</tr>
<tr>
<td>Girls</td>
<td></td>
<td>12</td>
<td>91</td>
<td>90</td>
<td>92</td>
<td>91</td>
<td>84</td>
<td>83</td>
<td>82</td>
<td>82</td>
<td>84</td>
<td>86</td>
<td>87</td>
<td>85</td>
<td>82</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14</td>
<td>94</td>
<td>91</td>
<td>92</td>
<td>86</td>
<td>88</td>
<td>90</td>
<td>90</td>
<td>86</td>
<td>86</td>
<td>85</td>
<td>84</td>
<td>85</td>
<td>79</td>
<td>78</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
<td>89</td>
<td>91</td>
<td>91</td>
<td>91</td>
<td>87</td>
<td>89</td>
<td>82</td>
<td>82</td>
<td>86</td>
<td>87</td>
<td>88</td>
<td>87</td>
<td>85</td>
<td>82</td>
<td>79</td>
</tr>
<tr>
<td></td>
<td></td>
<td>18</td>
<td>88</td>
<td>85</td>
<td>88</td>
<td>87</td>
<td>83</td>
<td>84</td>
<td>80</td>
<td>82</td>
<td>83</td>
<td>86</td>
<td>83</td>
<td>80</td>
<td>76</td>
<td>74</td>
<td>68</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>91</td>
<td>89</td>
<td>91</td>
<td>89</td>
<td>86</td>
<td>87</td>
<td>84</td>
<td>84</td>
<td>85</td>
<td>86</td>
<td>85</td>
<td>83</td>
<td>79</td>
<td>77</td>
<td>73</td>
<td>72</td>
</tr>
<tr>
<td>All total</td>
<td></td>
<td>88</td>
<td>86</td>
<td>88</td>
<td>83</td>
<td>80</td>
<td>81</td>
<td>77</td>
<td>77</td>
<td>78</td>
<td>79</td>
<td>76</td>
<td>76</td>
<td>70</td>
<td>69</td>
<td>66</td>
<td>61</td>
</tr>
</tbody>
</table>
In Study II, the repeated cross-sectional data from 1977 to 2005 (excluding the years 1981, 1983, 1989, and 2003 for which the question on parental smoking was not included in the questionnaire) for 14-, 16-, and 18-year-olds were used. Study III concentrated on the AHLS 2005 data and comprised all age groups (12-, 14-, 16- and 18-year-olds) whereas Study IV analyzed 14- and 16-year-olds in 1999, 2003 and 2007.

Study variables

Respondent’s gender and age were determined according to the sample-based information. The urbanization level of the place of residence was determined utilizing both sample-based information (respondent’s home address) and his/her self-report on the degree of urbanization level. All other information were based on respondents’ self-reports.

Measurement of smoking status (II, III, IV)

Respondents’ own smoking status was originally based on four separate questions (see Appendix, questions 5-8) In Studies II and III, smoking status was defined as daily, experimental and never-smoker. Daily smoking was defined as having smoked over 50 cigarettes in all, and having smoked at least once a day. Tobacco experimenters had smoked at least one cigarette in their lifetime, but were not daily smokers whereas never-smokers were defined as never having tried any cigarette.

In Study IV, the respondents’ smoking status was re-classified when the core question of interest (use of home-based sources of tobacco) was not addressed to never smokers and those who had smoked only one cigarette in their lifetime (those respondents were instructed to skip the other questions on smoking). In Study IV, daily smoking was defined parallel with Studies II and III, but experimental smokers were distinguished from occasional smokers and were defined as follows: Experimental smokers were those who had smoked 2-50 cigarettes in all. Occasional smokers were those who had smoked over 50 cigarettes in all, but were not daily smokers.

Parental smoking was based on respondents’ answers to questions regarding father’s and mother’s smoking status (see Appendix, question 11), and was classified into five categories in Studies II and III: two smoking parents; smoking father; smoking mother; both currently non-smokers but one/both ex-smokers; two never-smoking parents. When only one parent’s smoking status was reported and the other one was reported as having no mother/father/do not know, the classification was made according to one parent only. In Study IV, parental smoking was categorized into four categories of neither parent smokes (including two never-smoking parents, and two currently non-smoking but one/both ex-smokers); smoking mother; smoking father; and both parents smoke.

To assess family smoking status (II), a combination of parental and child smoking status was used.
**Home smoking ban (III, IV)**

In the AHLS questionnaires of 2005 and 2007, home smoking ban was measured by the question “Is smoking permitted in your home?” with four response categories: no one is permitted to smoke anywhere; smoking is permitted in some places only or sometimes; smoking is permitted freely in my home; and I cannot say (see Appendix, question 4). For analysis in Study III, home smoking ban was categorized into total ban (those reporting that no one is permitted to smoke anywhere), partial ban (those who reported that smoking was permitted in some places only/sometimes), and no ban (those permitted to smoke freely in their homes). For Study IV, the home smoking ban variable was dichotomized into total ban and no total ban (partial restrictions/no ban/cannot say).

**Parental permissiveness toward child smoking (III)**

To assess parental permissiveness towards child smoking at home, the adolescents were asked: “Do your parents allow (or IF you smoked, would they allow) you to smoke at home?” with alternatives no/yes/do not know (see Appendix, question 12).

**Measurement of tobacco sources (IV)**

Tobacco acquisition from three different types of sources was assessed. Acquisition from commercial source was elicited by the question: “Have you bought tobacco for yourself during the past month?” (No/Yes). Those who answered Yes were further asked “From where?” and, depending on the survey year, given 7-9 categories (from shop, kiosk, gas station, bar, vending machine, Internet, abroad, friends, other) representing commercial sources, except the category “friends” (see Appendix, question 9). Tobacco acquisition from social sources was assessed in the questionnaire by the following question: “Have you obtained tobacco during the past month in some other ways?” Response options with No/Yes responses included six sources: “from father or mother”, “from other adults”, “from siblings”, “from friends”, “took it from home”, “elsewhere, please specify?” (open-ended). Respondents were allowed to name several sources (see Appendix, question 10). Home-based sources meant “from father or mother”, “from siblings” and “took it from home” whereas all other sources meant other social sources. The responses “from friends” from the commercial source variable were combined with the other social source category.

**Other variables**

In addition to age and gender, several other variables were taken into account in the analyses including family structure (II, III, IV), father’s education (II, III), mother’s education (III), parental education (IV), urbanization level of residence (III, IV) and survey decade (II).

Family structure was categorized as nuclear family (II) / intact family (III) (child living with his/her own mother and own father) and other family type (II) /non-intact family (III). To avoid judgmental wording in Study IV, family structure was defined as
follows: “two biological parents” and single-parent/reconstituted family”. Father’s and mother’s education was divided into three categories: low (nine years or less in education); middle (9-12 years); and high (over 12 years). Father’s education was used to measure socioeconomic status of the family in Study II as this was the only variable available throughout the study period from 1977 to 2005. In Study III, both father’s and mother’s education was used separately. For analysis in Study IV, mother’s and father’s education were combined to describe parental education. Parental education was classified into both with high education; father low, mother high; father high, mother low; and both with low education. Education above 9 years was considered high and up to 9 years as low. When only one parent’s educational status was reported and the other was missing, the first and the fourth categories were used. Urbanization level of residence was determined by population density: Five categories were used in Study III: capital city area (the capital Helsinki and the adjoining towns); large cities (population over 100,000); other towns; rural municipalities (densely populated areas, such as small towns/village in rural areas); and other sparsely populated rural areas (isolated homesteads in rural areas). For analysis in Study IV, the two latter categories were combined. Survey decade was created for Study II by combining different survey years to describe the decades as follows: 1970s (1977, 1979); 1980s (1985, 1987); 1990s (1991-1999); and 2000s (2001, 2005).

Statistical methods (II-IV)

Multinomial logistic regression (II, III) and binary logistic regression (IV) were applied as the principal statistical tool in the analyses with results presented as odds ratios (OR) and 95% confidence intervals (CI). Both direct age-gender-standardization by giving all age and both gender groups of equal size (II) and adjustment age and gender statistically in the multinomial and logistic regression models were used (II, III, IV). Statistical significances were tested with the Pearson’s Chi-squared tests (II, III, IV). To study the reliability of the answers in the AHLS data, Cohen's kappa coefficients were calculated (II). Statistical analyses were performed using SPSS for Windows versions 14.0.2. (II), 11.5.0 (III) and version 15.0 software (IV). Detailed descriptions of the statistical analyses are given in Studies II-IV.

Validity and reliability assessment of the AHLS data

The test-retest study

The test-retest study was applied to study the reliability of the answers in the AHLS data in 2001 (II). This was done by calculating statistical Cohen's kappa coefficients, which is used as a measure of agreement between two categorical measurements measured on the same subject. The Kappa is usually interpreted to be very good when approximately 0.81-1.0, substantial 0.61-0.80, moderate 0.41-0.60, fair 0.20-0.40, and
poor when less than 0.20 (Landis and Koch 1977). By drawing a random sub-sample of 14-year-olds ($n=400$) from the initial subject series in 2001, the same questionnaire was sent to these respondents four weeks after their response to the initial inquiry ($n=302$). Altogether, 254 questionnaires were returned. The test-retest study indicated substantial or very good repeatability for the main outcome variables in Study II with Cohen’s kappa coefficient values to be .75 for experimental smoking, .77 for daily smoking, .81 for mother’s smoking, and .77 for father’s smoking.

Nonresponse analyses

To estimate the potential bias from nonresponse for the main outcome measures, the nonresponse analyses were conducted in Studies II, III, and IV. The respondents were categorized into three groups according to how promptly they returned the original questionnaire, first re-inquiry and second re-inquiry assuming that the later the person answered the more he/she resembled a non-respondent.

A child’s daily and experimental smoking rates varied systematically between early and late respondents, suggesting that the later the child responded, the more common both experimental and daily smoking were (II, III, IV). With regard to parental smoking (II), there were fewer children with never-smoking parents in the second (35.5%) and third wave (36.3%) than in the first (41.9%). Moreover, when the effects of nonresponse on the family smoking profile were analyzed in Study II, there was a statistically significant increase ($p<0.001$) with the later response in the proportion of families with smoking parents and a daily smoking child (5.0% for first, 7.2% for second, and 7.8% for third wave) and of families with a smoking father and a daily smoking child (4.7%, 5.2%, and 9.8% respectively). In Study III, there were fewer children reporting a total home smoking ban in the second (57%) and third waves (52%) than in the first wave (60%) ($p=0.001$) suggesting that the later the child answered the less likely it was to have a total ban on smoking in the home. Regarding answers to home-based sources in Study IV, no systematic or statistically significant differences between the groups were found.
SUMMARY OF THE RESULTS

Literature review (I)

The aim of the first study (I) was to conduct a literature review of the current state of knowledge regarding familial influences related to adolescent smoking from the international literature, and to identify Finnish studies published in this field.

International studies searched from 2000 through 2005 could be organized according to the research topic into the five main categories (Table 4). A total of 44 relevant articles was identified from 2000 onwards, the greatest number of studies being identified in the category of tobacco-specific family factors (n=28). From the international studies, five relevant review studies were identified of which only one systematic review was primarily related to the topic of interest (Avenevoli and Merikangas 2003). Regarding the Finnish literature, only sixteen studies were found indicating the paucity of research interest in this field. The earliest study was published in 1962. No review articles had been published.

Table 4. Categorization of research literature, and number of studies identified.

<table>
<thead>
<tr>
<th>Research literature categories</th>
<th>Number of studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>International studies</td>
<td></td>
</tr>
<tr>
<td>Reviews of familial influences on adolescent smoking</td>
<td>2</td>
</tr>
<tr>
<td>Other reviews examining familial influences on adolescent smoking</td>
<td>3</td>
</tr>
<tr>
<td>Studies reporting the influence of family structure on adolescent smoking</td>
<td>5</td>
</tr>
<tr>
<td>Studies reporting the influences of parenting and family interaction on adolescent smoking</td>
<td>11</td>
</tr>
<tr>
<td>Studies reporting the influence of tobacco-specific family factors on adolescent smoking</td>
<td>28</td>
</tr>
<tr>
<td>Finnish studies</td>
<td>16</td>
</tr>
</tbody>
</table>

*Tobacco-specific family factors*

There seemed to be a large body of international research describing the role of specific tobacco-related family factors in adolescent smoking. Parents’ and siblings’ own smoking as well as parents’ negligent attitude toward smoking emerged as the strongest predictors for child smoking. Considerably less emphasis was put, for example, on home smoking bans, and compared to other studies this area has remained largely unexplored.
Research in Finland has not been much focused on the role of tobacco-specific family factors. National interest has mostly been focused on producing evidence of the relationship between parental and child smoking and parental smoking and family structure in adolescent smoking (I: Table 2) Home smoking bans, for example, were unexplored.

Other family factors

Concerning the international research literature, studies describing the role of common family characteristics in relation to adolescent smoking focused on parenting practices, parent-child relationships or issues related to family interactions. Studies examining the influence of diverse forms of family structures in adolescents’ smoking revealed a consistent finding across studies showing that living with both biological parents reduces adolescents’ risk of smoking compared to adolescents living in a single-parent or other types of families.

In Finland, studies addressing the role of common family characteristics in adolescence smoking were scarce, although some attention has been paid to inconsistent parenting as a predictor of child smoking. The links between reconstituted family structure and adolescent smoking, however, were established in several Finnish studies. (I: Table 2)

Study frameworks

Two frameworks organizing the factors related to children’s smoking or absence of smoking could be created on the basis of this study. First, a general picture emphasizing a complex set of factors related to adolescent smoking or absence of smoking was provided reflecting a number of socio-environmental and individual influences. (Fig 3) The second framework presented a more detailed picture of familial influences. (Fig 4)
Fig 3. Factors affecting adolescent smoking or absence of smoking (figure modified from Study 1, Fig 1).
Changes in family smoking and evolution of the association between parental and child smoking from 1977 to 2005 (II)

The aim of Study II was to describe the trends in family smoking, and to examine the evolution of the association between parental and child smoking over four decades (1977-2005).

Family smoking profile

The age- and gender-adjusted distributions (%) showed that the proportion of never-smoking families, referring to both child and parents being never-smokers as experienced by the child, increased substantially from 9% to 18% between the 1970s and the 2000s. (II: Table 2) In the corresponding time period, only a slight increase from 3.8% to 5.5% was observed in the proportion of smoking families (daily smoking child and two smoking parents).

Examination of mothers’ and fathers’ smoking indicated that fathers’ smoking constantly declined throughout the entire period, while mothers’ smoking first showed an increase until the 1990s after which it started to decrease. (II: Table 2)
Association of parental and child smoking

Parental smoking was strongly associated with child daily smoking. In the multivariate model, adjusted for age, gender, family structure, and survey decade, the odds ratios for the child’s daily smoking were 8.1 (95% CI 6.7 to 9.7) with two smoking parents, 5.5 (95% CI 4.5 to 6.8) with smoking mother, 4.2 (95% CI 3.5 to 4.9) with smoking father, and 3.1 (95% CI 2.6 to 3.6) when one/both parents were ex-smokers compared to children of never-smoking parents. (II: Table 3) Additional adjustment for father’s education, and analyzing data separately by each survey year and by four different time periods had no effect on the result.

To find out whether the association between parental smoking and child experimental and daily smoking changed over time, parental smoking and survey decade interactions were examined. Only a few statistically significant interactions were found. (II: Table 4)

Home smoking bans and the association with child smoking (III)

The aim of Study III was to examine home smoking bans, their association with sociodemographic and tobacco-related factors in family, and with child smoking.

Prevalence of home smoking bans

The percentage of 12-18-year-olds reporting a total ban on smoking was 58% while 27% reported a partial ban, and 4% no ban. The proportion of those who could not say whether they had a ban on smoking at home or not was 10% (n=661). The prevalence of total home smoking ban varied by age, but not between genders. Older age groups reported total ban less often than younger age groups (p<0.001). (III: Table 1)

Associations of home smoking ban with sociodemographic and tobacco-related factors

The absence of a total ban was associated with living in other type of family than with two biological parents, parents’ lower educational level, parental smoking and parents’ permissive attitude towards child smoking. (III: Table 2 and 3)

Association between home smoking ban and child smoking

When the association between the partial/no ban and child daily smoking was analyzed, increased likelihood of being a daily smoker was observed compared to those who had a total ban and were never-smokers. This association remained even after adjusting for sociodemographic factors, parental smoking and parental attitude. The adjusted odds ratios for child daily smoking were 2.9 (95% CI 2.3-3.6) for partial ban and OR 14.3
(8.6-23.7) for no ban. (III: Table 4) With two smoking parents, the adjusted ORs were correspondingly 1.5 (95% CI 0.7-3.0) and 2.9 (95% CI 1.1-7.8).

Home-based sourcing of tobacco (IV)

The aim of Study IV was to study the use of home-based sources of tobacco and associated family factors among Finnish adolescent smoking population.

Reported use of home-based sources

Using home-based sources of tobacco during the past month was reported by 44% of daily, 11% of occasional and 9% of experimental smokers. (IV: Table 2) When use of different home-based sources was examined separately among daily smokers, home sources turned out to mean siblings 24%, parents 19%, and taking from home 19%. Taking tobacco from home was significantly more prevalent at age 14 (p<0.001) than at 16 years, whereas getting tobacco from parents was more common among 16-year-olds (p=0.016). (IV: Table 3)

Factors associated with home-based sourcing

In the initial cross-tabulation analyses, parental smoking and absence of a home-smoking ban increased use of home-based sources both among daily and occasional/experimental smokers. Concerning daily smokers, obtaining tobacco from parents was more common in single-parent/reconstituted families than in families with two biological parents. Obtaining tobacco from parents and taking them from home were more common when parental educational status was low. Urbanization level of residence was unrelated to use of any home-based source. Among occasional/experimental smokers, there were no statistically significant differences by family structure, parental education, or urbanization level of residence. (IV: Table 4)

The results from the final logistic regression model in daily smokers revealed that the adjusted odds ratios (OR) for obtaining tobacco from any home-based source was 7.0 (3.8-12.9) when both parents smoked versus nonsmoking parents. In the absence of a home-smoking ban, the corresponding OR was 2.2 (1.3-3.8) versus those reporting having a ban. (IV: Table 5)
DISCUSSION

Methodological considerations

**Literature review (I)**

Based on 44 international research studies and on 16 Finnish studies, the first article aimed to provide a general overview of research published in the topic area and to identify major research gaps. Several limitations related to this literature review, however, need to be considered.

One major limitation was the general form of search strategy used in the collection of data. Conducting a systematic review would have been the optimal method for summarizing research knowledge, and would also have been valuable when assessing methodological quality of studies.

The broad scope of the topic forced the authors strictly to limit the research. Based on the authors’ own judgment, the search for international studies was limited to a certain period of time (years 2000-2005). Furthermore, studies examining ethnicity, SES (except the role of family structure) or intervention studies were not included. Only studies published in peer-reviewed journals were included. Although some studies may have been missed due to this, it was done to ensure as valid literature as possible. Another possible limitation was that studies conducted in other languages than English might be underrepresented in the present study. The literature search was further limited to the databases used. Although a computerized database search strategy is a common strategy in academic work to identify published studies, there is always a possibility that some studies may have been missed. The key search terms were selected to be broad, which means that the inclusion of more specific words in the search such as “stepmother”, or “grandparent” might have resulted in a larger number of studies.

Despite the limitations mentioned above, the overview of the literature can be considered to be relevant enough to provide a general understanding of research accomplished on the topic of interest and also to identify the major research gaps. In the Finnish context, this literature review, to the best of our knowledge, was the first to be conducted.

**The Adolescent Health and Lifestyle Survey (II, III, IV)**

The Adolescent Health and Lifestyle Survey (AHLS) has produced valuable data for adolescence health and health behaviors since the end of the 1970s. Methodological challenges related to AHLS have previously been extensively reported and discussed in several studies (see e.g. Rimpelä et al. 2005, Rimpelä et al. 2007). Some limitations and methodological features still need to be further discussed. The major concerns are
related to cross-sectional study design, self-reported information and the declining response rate trend. Cross-sectional study design is methodologically weak for drawing any firm conclusions about causal relationships between the studied variables. Self-reported information poses challenges for the interpretation of the results and the declining response rate trend highlighted the potential bias due to nonresponse.

All the data in AHLS are based on self-reports except the sample-based information (age, gender, place of residence). Repeatability concerning self-reports on own smoking and parental smoking has been analyzed in the AHLS data indicating good repeatability (II). Although self-reports of smoking were not validated with biochemical measures in this study, self-reported smoking has generally been found to be accurate and to concur with biochemical indices (Patrick et al. 1994; Post et al. 2005) and this finding has also been confirmed in Finland (Vartiainen et al. 2002; Kentala et al. 2004). One interesting question is whether adolescents give valid reports on their parents’ smoking. The research findings on this have been found to be valid (Pomerleau et al. 2005). In one Dutch family study (Harakeh et al. 2006) the reliability of adolescents’ and parents’ proxy reports was investigated. The authors concluded that parents were not able to provide reliable reports on their children’s smoking whereas adolescents aged 13-17 years were able to assess their parents’ smoking status accurately. Given that adolescents’ self-reports concerning their parents’ smoking are reliable, they can also be deemed sufficient to estimate parents’ smoking prevalence in population surveys. In fact, in our study (II), we were able to show that parents’ smoking trends were in line with a national health behavior survey of the Finnish adult population (Helakorpi et al. 2008b).

One important limitation of the AHLS data was the decrease in the response rate over time. Smoking is affected by the decreased response rate in AHLS so that smoking is underestimated which may, in turn, biased the results. On the other hand, it has been reported that while it affects prevalence rates in surveys, the direction of smoking trends obtained from these surveys has not changed (Rimpelä et al. 2005, 2007). The reliability of the smoking trends reported in AHLS is also largely improved compared to trends reported in the School Health Promotion Survey; the smoking trends are fairly parallel (Rimpelä et al. 2005, 2007). When investigating whether the decline in survey response rates introduced bias into population estimates of smoking prevalence among USA population, no evidence that declining response rates resulted in less accurate or biased estimates of smoking was found (Biener et al. 2004). Overall, declining response rates have been a common phenomenon concerning tobacco surveys, especially in the 1990s (Biener et al. 2004). This trend has not only affected adolescent surveys but also adult population surveys (Helakorpi et al. 2008b). A response rate from 50 to 60% is generally considered acceptable for surveys (Diem 2002). The most recent response rate from AHLS 2007 was 61%. In line with a declining response rate trend, it has become particularly important to assess the potential for bias due to nonresponse. We carefully analyzed this in our own AHLS reports (Rimpelä et al. 2005, 2007) as well as in the original publications of the present dissertation when we indirectly analyzed the effect of nonresponse bias. Although there are several ways to keep response rates high, such as incentives or changing the sample design (Kessler et al. 1995), to ensure the comparability of AHLS data over time, the sample selection and data collection methods have been kept largely unchanged.

The research findings from this study can be generalized to other Western societies with similar socio-cultural profile. Both response rate and survey language are factors
affecting the generalizability of the results in Finland and internationally. It should be taken into account that Finnish society is very homogenous thus no generalization to other adolescent populations, especially those involving different ethnicity groups can be made. On the other hand, the results can probably be well generalized to Finnish population. Therefore, the changes seen in the sample will largely also represent the changes in the entire adolescent population. The response rate among boys was lower than among girls, suggesting that results concerning boys should be generalized with some caution.

To briefly sum up, the biases discussed above are not likely to change the overall picture obtained from the results of the present study. Highly comparable surveys with similar samples and data collection over time together with the long follow-up give strength to the findings.

Discussion of the main findings

Familial influences investigated in the adolescent tobacco research literature before 2006

The first study (I) summarized the current state of knowledge regarding familial influences on adolescence smoking as seen in international studies, and also identified Finnish studies intended to provide a general understanding of what has been already done and which areas and topics deserve further investigation. The family-specific framework provided by this study reminds us how complex smoking behavior is and how the phenomenon is affected by multiple factors. It is important to note that no causal relationships between factors can be established, and thus the arrows presented in study frameworks (Fig 3 and Fig 4) between different levels and factors only indicate that changes in one level or factor are also likely to reflect on others and that reciprocal influences between different factors therefore also exist. What is also worth mentioning is that familial factors identified to be important in determining adolescent smoking or absence of smoking today may not necessarily remain essentially the same in the future.

The international studies reviewed suggest that the most extensively investigated are tobacco-specific family factors which serve as important predictors of both adolescent smoking initiation and continuation. Parents’ and siblings’ smoking and negligent parental attitude towards smoking emerged as the strongest predictors for smoking initiation and continuation in children. The importance of more common familial influences such as parenting or interactions within the family in shaping adolescents’ smoking behavior has not yet been fully established. However, family structure has been clearly associated with adolescents’ smoking, having lowest among adolescents living in two biological parent families. Since considerable numbers of studies have examined tobacco-specific family factors, a possible explanation might be that such factors are relatively easy to measure whereas common family factors such as communication between family members are much more complex and often also necessitate qualitative research methods.

After the review of the Finnish studies, only sixteen articles from the 1960s onwards were found, revealing that the interest in this area has so far been minimal in Finland. In
the earlier Finnish report by Patja and Haukkala (2004), the scarcity of national studies was also pointed out. These scholars concluded that it is fairly difficult to determine the potential of Finnish parents and families to discourage their children from smoking. National interest has mostly been focused on the role of parental smoking and family structure in adolescent smoking and on producing evidence of the relationship between parental and child smoking. Although some Finnish researchers have found that factors such as parenting and parent-child relationship are important in determining whether adolescents start smoking, the research has remained very limited.

It may be assumed that the lack of family-related studies in Finland may be due to the fact that the basis of Finnish smoking prevention efforts has been through legislative measures, mass communication and health education in schools. Parents and families have not been at the core in smoking prevention thus studies examining specific family influences have been rare indeed. As demonstrated by this literature review, there appears to be now a need to increase research in Finland to achieve better understanding of the role of familial influences in adolescence smoking. In particular, research aimed at developing and implementing family-focused intervention strategies to prevent adolescents’ smoking would open up new perspectives for adolescent smoking prevention work. Internationally, there is growing interest in familial influences on adolescence smoking prevention (Thomas et al. 2007; Petrie et al. 2007; den Exter Blokland 2006; Huver 2006). The issues that could be also looked into further in the Finnish context are home smoking policies, which have not yet been thoroughly investigated. Similarly, the question of whether or not grandparents have any impact on children’s smoking behavior deserves further study.

Smoking in Finnish families

Considering the smoking patterns of families over time in Study II, they appeared to have changed a great deal over the decades. The number of never-smoking families has notably increased from the 1970s to the 2000s, suggesting that an increasing proportion of children today live in families where parents are never smokers as experienced by the child. This favorable development is not a complete surprise since adults’ smoking has declined in the corresponding time period, particularly among males (Helakorpi et al. 2008b). The parental smoking trends observed in our study were largely parallel with the national trends of adults’ smoking. What is also evident is that owing to the long history of comprehensive tobacco legislation, the social norm for smoking has changed a great deal in Finland and smoke-free public places are nowadays a norm widely accepted by the public (Rimpelä et al. 2005, Helakorpi et al. 2008b).

The strong association found between parental smoking and child smoking was in line with earlier studies (for a review see Avenevoli and Merikangas 2003). However, the original hypothesis in this study about the declining association between parental smoking and child smoking over time did not gain any support. It was assumed that notable societal level changes as well as changes related to maturation occurring over the decades would have an impact on this association. Unexpectedly, the association between parental smoking and child smoking persists strong and similar over the decades. This basically means that the risk for adolescent smoking according to parent smoking in the 2000s remains essentially the same as it was in the 1970s. Although the reasons behind this finding are not known, we may assume that changes occurring at the
societal level have not greatly changed social relationships and common practices inside the families (Lahikainen 2005). This new finding of the persistent impact of parents’ smoking on their offsprings’ smoking reminds those working in smoking prevention that working with families is worth the effort and is not dependent on time. Since smoking is known to be unequally distributed among the population, but it is more concentrated among those with lower SES (Cavelaars et al. 2000; Huurre et al. 2003), it is possible that the association between parents’ and child’s smoking may have changed across different SES groups over time. However, this was not emphasized in the present study but would be an interesting area of future investigation, for example using the AHLS-based data.

**Significance of home smoking bans**

According to the report of the Royal College of Physicians (Royal College of Physicians 2005), there is evidence from Australia, USA and Ireland that comprehensive national smoke-free legislation has contributed to an increase in home smoking bans. In our study, we expected to see comprehensive bans adopted by the majority of Finnish homes. The findings from this study revealed, however, that comprehensive home smoking bans were not a rule in Finnish families - only 58% of 12-18-year-olds reported a total home smoking ban. It seems that not enough is being done in Finland. By comparison, in Australia, the prevalence of total home smoking ban was reported to be 75% among adolescents of similar age (Szabo et al. 2006). Possible explanations for this include the fact that measures other than legislative actions to tackle the problem related to environmental tobacco smoke in Finland have been scarce if any, and specific campaigns to promote the adoption of home smoking bans, in particular, have been nearly non-existent.

It was shown in the third study (III) that when a total ban on smoking was imposed, there was a reduced risk for daily smoking and smoking experiments among children. The most noteworthy finding was that this also persisted even when the parents themselves smoke. The implications of these findings are that smoking in the home should be banned in families and this is not dependent on adults’ smoking status. Increasing parental knowledge about the benefits achievable by banning smoking in the home is crucial in this process. Non-smoking home campaigns and programs should be supported in Finland to encourage and help families to have non-smoking homes. Probably the most challenging task for health professionals is to promote non-smoking policies in homes with smoking parents.

There is evidence that reported prevalence of home smoking ban is associated with sociodemographic and tobacco-related family factors (Pizacani et al. 2003; Merom and Rissel 2001). This also held true in our study and home smoking bans appeared to be less strict in families with lower socioeconomic backgrounds. The factors that were strongly associated with the absence of a total home smoking ban in the present study were: living in other type of family than with two biological parents, having parents with lower educational level, having both smoking parents and having parents’ with permissive attitude toward child’s smoking. Since the prevalence of total home smoking ban varied according to the sociodemographic characteristics of adolescents, it may have important implications for smoking prevention work emphasizing that families characterized by lower socioeconomic status and with smoking parents are particular
target groups. One likely explanation why home smoking bans are less common among those population groups is that smoking is marginalized into lower socioeconomic groups (Cavelaars et al. 2000).

It should be noted that the findings concerning prevalence of home smoking ban in this study might have been different if a different measure of home smoking ban had been chosen. While it was not possible to study home smoking bans more thoroughly due to limited space in the AHLS questionnaire, the home smoking ban measure of the present study did not cover all aspects of this concept, and thus only limited information can be offered. Some important issues that have remained unresolved in this study are whether home smoking bans are also applied to smoking visitors and whether a family has any rules about smoking, for example, in automobiles. These issues would merit further investigation. Furthermore, the results would have been different if elicited only from parents. Current evidence concerning home smoking bans has generally been obtained solely from adult household members (Mumford et al. 2004). Thus, the importance of obtaining the children’s own perspective on home smoking bans is obvious.

This study was the first of its kind in Finland. Further studies would open up new viewpoints and understanding of the full potential of home smoking bans in the prevention of adolescent smoking. Investigating home smoking bans from the perspective of children’s own experience also continues to be important.

**Home-based sourcing of tobacco**

Knowledge of the extent to which different tobacco sources are used among adolescent smoking population is important in order to reach a comprehensive understanding of their tobacco acquisition patterns and to focus prevention measures. This information is also vital when assessing the existing tobacco control policies. The use of home-based sources has not earlier been studied extensively in Finland before the present study.

Our study ascertained the use of various tobacco sources by focusing on home-based sourcing, in particular, among different adolescent smoking groups (daily, occasional, experimental). The main finding in Study IV was that the use of home-based sources (parents, siblings, taking tobacco at home) to obtain tobacco is common among adolescent smokers, although other social sources as well as commercial sources were used still more often. Home-based sourcing was revealed to be relatively important for daily smokers, while for occasional and experimental smokers friends were the most important channel to obtain tobacco. The findings of this study further indicated that parents as non-smoking role models and a strict home smoking policy referring to a total ban on smoking in the home protect against home-based sourcing. Encouraging smoking parents to quit smoking through counseling contacts by health professionals, for example, as well as educating families about the role of home-based sourcing in maintaining children’s smoking habit would be beneficial.
Conclusions

The importance of several family factors in smoking and smoking-related behaviors of adolescents is underscored by this study: In light of the main findings, being a non-smoking role model, adopting a total ban on smoking in the home and limiting adolescents’ access to tobacco through home-based sources provide invaluable tools for parents and families in the prevention of smoking among adolescents.

The unique finding of the evolution of the association between parental smoking and child smoking suggests a persistent impact of parental smoking on child smoking across time. The finding of the increased proportion of never-smoking families suggests that more children today than in earlier decades live in families where parents are never smokers.

Home smoking bans have not earlier been studied in Finland before the present study. One of the noteworthy findings was that a substantial proportion of adolescents still live in homes where there is no total home smoking ban. A total home smoking ban protects from smoking by reducing risk of child smoking, even when parents smoke.

The home-based sourcing of tobacco among adolescent smoking population is fairly common, and is related to certain family factors of which parental smoking and absence of a total ban on smoking in the home seems to have disadvantages.

Implications for practice and research

Three major processes determining the prevalence of smoking in the population include initiation rate at adolescence, maintenance rate since early adulthood, and smoking cessation rate at any age. In the prevention of smoking, all three processes need to be covered, but preventing smoking initiation plays a particular role. Current public health strategies already available in Finland to prevent and reduce adolescents’ smoking continue to be important. Among these are such public health actions as legislative measures, health education, and support for smoking cessation. Monitoring smoking and its related behaviors also continues to be an important part of our national tobacco control policy.

This study highlighted that in a country with over 30 years of experience in national tobacco control policy, surprisingly little has been done in the area of the family. There is a clear need to adopt a more active role on this topic in terms of both research and practice.

From the practical point of view, public health education as well as specific smoking prevention efforts should take into consideration the main issues emphasized by the present study. Hopefully the results of this study will encourage those working with parents and families to focus more on familial issues when the aim is to prevent and reduce adolescent smoking.

Child smoking prevention work would benefit from investigating family-focused intervention methods and the possibilities to build such interventions. It is not yet known what kind of intervention strategies would be most effective and no “best practice” model exists. The results of only a few controlled family-focused smoking prevention programs have been published. These have shown promising results with reductions in smoking initiation and also modest long-term effects on prevalence of smoking among adolescents (Thomas et al. 2007, Petrie et al. 2007). A particularly
important aspect appears to be whether or not the child receives antismoking socialization from their parents (see e.g. Jackson and Dickinson 2006).

In order to achieve non-smoking homes, it is necessary to strengthen efforts that would increase public awareness of the numerous benefits achievable through a total home smoking ban. This information should be actively promoted by health professionals in ways such as intensive health education campaigns. So far, this issue has not been accorded the priority in smoking prevention it deserves. Moreover, since the absence of a total ban on smoking in the home is mostly concentrated on lower socioeconomic status families, this result permits the conclusion that smoking prevention needs to focus on preventive strategies for those subgroups in particular. In this process, encouraging smoking parents to quit smoking is also essential.

Parents should be provided with guidance about what it means and what kinds of implications it may have if children obtain tobacco from home-based sources. There exists a dilemma, when accepting the child’s use of home-based sources to obtain cigarettes; at the same time parents undermine the common prevention efforts to restrict adolescent access to tobacco from commercial sources.

From the research point of view, the existing studies are mostly quantitative and conducted in cross-sectional design. Thus, the importance of longitudinal approaches and qualitative approaches has often been highlighted (Turner et al. 2004). The issues that could also be looked into further in the Finnish context are home smoking policies. Studies including more detailed measurement of home smoking bans and practices as well as collection of smoking related data simultaneously from parents, children and other family members would greatly enhance our understanding of this topic. The question of whether or not grandparents, for example, have any impact on children’s smoking behavior deserves further study. Another interesting issue to investigate further is the possible changes occurring in the association between parental and child smoking across different SES groups over time.
ACKNOWLEDGEMENTS

This doctoral research work was carried out at the University of Tampere, School of Public Health, and was financially supported by the Ministry of Social Affairs and Health (the §27 Appropriation of the Tobacco Act), the Competitive Research Funding of the Pirkanmaa Hospital District, and the Juho Vainio Foundation.

I owe my deepest gratitude to my supervisors: Professor Arja Rimpelä and Adjunct Professor Matti Rimpelä. As my principal supervisor, Professor Arja Rimpelä has tenaciously guided my research career and has made me what I am as a tobacco researcher. I greatly value her knowledge and expertise in the academic research world. Adjunct Professor Matti Rimpelä has greatly improved my understanding in this endeavor with his exceptional mentorship. I also express my sincere gratitude to the official reviewers of this dissertation, to Professor Kerttu Tossavainen and to Adjunct Professor Ossi Rahkonen for their review and constructive comments which I appreciated.

I warmly acknowledge Mrs. Virginia Mattila, M.A., for the revision of the language of this dissertation, and the late Marja Vajaranta for her valuable job of revising the language of the original publications. Many thanks also go to Tiina Luukkaala for her valuable help with statistics and being a co-author, and to Lasse Pere for supporting me several times regarding the huge AHLS database. I am also grateful for the support provided by the Research Network on Health and Health Promotion of Children and Adolescents (NEDIS) for the preparation of this work.

There are also several other colleagues and friends that would deserve many thanks but who are not mentioned here. I am privileged to have you all near me and I truly believe that you know who you are.

Finally, I owe my heartfelt thanks to my family. To my parents, Sinikka and Arto, who raised me up to walk on stormy seas with so much support and encouragement. I am also very grateful to my brother Petri and his wife Suvi for their endless friendship. You always bring happiness to my life and share all true colors of life with me. Last but not least, my dearly beloved Roope, thank you for brightening my every day with unconditional love.

I am blessed to have you all around me.
REFERENCES


School Health Promotion Study 2008: Available at: http://info.stakes.fi/kouluterveyskysely


APPENDIX:

Relevant parts of the Adolescent Health and Lifestyle Survey questionnaire

1. At present, where do you live?
   - In the centre of a CITY or TOWN
   - In the outskirts of a CITY or TOWN
   - In a RURAL town, village, or other population centre
   - In a RURAL area outside towns, villages or other population centres

2. Does your family include
   - Mother and father
   - Mother and stepfather
   - Father and stepmother
   - Only mother
   - Only father
   - Husband or wife (married or cohabiting)
   - Other guardian, who? __________

3. What is your parents’ education? (mark the highest level of education)

<table>
<thead>
<tr>
<th>Father</th>
<th>Mother</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary or comprehensive school, nothing else</td>
<td>☐ ☐</td>
</tr>
<tr>
<td>Primary or comprehensive school and vocational training (vocational school, courses etc)</td>
<td>☐ ☐</td>
</tr>
<tr>
<td>Comprehensive school (and vocational education etc)</td>
<td>☐ ☐</td>
</tr>
<tr>
<td>Matriculation examination (and vocational education etc)</td>
<td>☐ ☐</td>
</tr>
<tr>
<td>College or university degree (Bachelor’s or Master’s degrees)</td>
<td>☐ ☐</td>
</tr>
</tbody>
</table>

4. Is smoking permitted in your home?
   - ☐ No one is permitted to smoke anywhere
   - ☐ Smoking is permitted in some places only or sometimes
   - ☐ Smoking is permitted freely in my home
   - ☐ I cannot say
5. Have you ever smoked (tried) tobacco?
   - No (you can go to Question xx)
   - Yes

6. How many cigarettes, pipefuls and cigars have you smoked altogether until now?
   - None at all (you can go to Question xx)
   - Only one (you can go to Question xx)
   - About 2-50
   - More than 50

7. When did you last smoke a cigarette, cigar or pipeful?
   - Yesterday or today
   - 2-4 days ago
   - About a week ago
   - About 2 weeks - 2 months ago
   - About 2-6 months ago
   - More than 6 months ago (you can go to question xx)

8. Which of the following alternatives best describes your CURRENT SMOKING?
   - I smoke once a day or more often
   - I smoke once a week or more often, but not daily
   - I smoke less than once a week
   - I have stopped smoking temporarily or altogether
9. Have you bought tobacco for yourself during THE PAST MONTH?
   - No
   - Yes, where (answer all alternatives)
     - Shop
     - Kiosk
     - Friends
     - Gas station
     - Bar
     - Vending machine
     - Trip to Sweden or Estonia
     - Street vendor
     - Internet
     - Other, where?

10. Have you obtained tobacco during the past month in some other ways?
    - from father or mother
    - from other adults
    - from siblings
    - from friends
    - I took it from home
    - elsewhere, please specify

11. Have your parents smoked during your lifetime?
    - Never smoked
    - Has smoked but stopped
    - Smokes currently
    - I have no father/mother
    - or I cannot say

12. Do your parents allow (or IF you smoked, would they allow) you to smoke at home?
    - No
    - Yes
    - I don’t know
Perheen merkitys lasten tupakoinnin alkamisessa

Tässä artikkelissa luodaan katsaus kansainvälistä ja suomalaisia julkaisuissa julkaistuihin tutkimuksiin vanhempien ja perheen merkityksestä lasten tupakoinnin. Katsauksen alkuosassa kuvataan lasten tupakoinnin liittyviä yleisiä viitekehyksi sekä näennävään tarkemmin siihen liittyviä perheitekijöitä. Perheellä on keskeinen merkitys tupakoinnin omaksumisessa ja tavan jatkumisessa.

Tupakkaspeileistä perheitekijöistä vanhempien ja sisarusten tupakoinnit sekä vanhempien välipitämätön suhtautuminen tupakoinnin ennuistavat voimakkaimmin lasten tupakointia. Yleistä perheitekijöitä ydinperheessä asuvien lasten tupakointi on harvinaisempaa kuin muussa perhemuodossa asuvilla. Vanhemmuuden tai perheen vuorovaikutuksen suhteellisesta merkityksestä tupakoinnin alkamisessa on tutkimus toistaisi, että täysin selkeä kuvaa.

SUSANNA RAINIO, MATTI RIMPELÄ, ARJA RIMPELÄ

JOHDANTO

Tupakoinnin ehkäisy on Suomessa keskitetyn ensisijaisesti terveysasutuksen joukkotoivotuksessa ja kouluyhteisössä sekä sitä tukevaan laki-
Kuvio 1. Lasten tupakoinnituotteen tai tupakoimattomuuteen liittyvä terö ja tekijät.

TUPAKKAPOLITTIKKA
• tupakkakontrolli; tupakan myynti- ja tupakointirajoitukset

(Tupakointi) KULUTTUURI
• tupakointiin suhtautuminen, normit, perinteet

MEDIA
• mainonta, roolimallit

PERHE
• yleiset tekijät (esim. perherakenne, vuorovaikutus)
• tupakkasiesitettävä tekijät (esim. vanhempien tupakointi, kodin tupakointisäännöt, asenteet)

VARHAISKASVATUS
• lasten hoito, kasvatus, opetus, oppiminen

NEUVOLA-, KOULUTERVEYDEN- JA OPILAS-HUOLTO, MUU PALVELUJÄRjestelMä

KOULU
• kouluterveyden, ilmapiiri, eetos, koulun tupakkipoliittikka

YSTÄVÄT
• ystävien tupakointi, suhtautuminen tupakointiin, tupakan hankinta

HARRASTUKSET

TERVEYSKASVATUSPROJEKTIT JA -KAMPANJAT
• esim. tupakoimattomuuskilpailut

HENKILÖKOHTAISET TEKIJÄT JA OMA ELÄMÄNTYYLI
• esim. geneettiset tekijät, sukupuoli ja ikä, kasvu, oppiminen, terveys, elämäntyylis, persoonallisuus

Aika

perheiden mahdollisuksia lasten tupakoinnin ehkäisyssä ei ole turkittu eikä edistetty riittävää.

Tässä katsauksessa tarkastellaan kotimaista ja kansainvälistä tutkimuskirjallisuutta perheen merkityksestä lasten tupakointiin. Kuvio 1 toimii katsauksen yleisennä viitekehyksenä havainnollistaen niitä keskeisimpää biopsykososialisia ja ym.-päristötekijöitä, joiden voidaan katsoa vaikuttavan yleisellä tasolla lasten tupakoinnituotteen tai tupakoinnin alkamiseen (kuva 1, Rimpelä 1980, Mayhew ym. 2000, Turner ym. 2004). Per-
Kuva 2.
Lasten tupakoinnattoimutoon tai tupakoinnin alkamiseen liittyvät perhetekijät.

**Yleiset perhetekijät**

PERHEEN SOSTOEKONOMINEN
TILANNE ↔ VANHEMUUS
JA VUOROVAIKUTUS

- perheetarvike

- muut sosioekonomiset tekijät:
  - vanhempien koulutus
  - lasten käyttövarojen määrä
  - asuinpaikka
  - ym.

LAPSEN TUPAKOINNATATSAUKSEN
TUPAKOINNIN
ALKAMINEN

**Tupakkasposifit perhetekijät**

PERHEEN JÄSENTEN
TUPAKOINTI ↔ PERHEEN SUHTAUTUMINEN
TUPAKOINTIIN

- vanhempien ja muiden perheenjäsenten
  tupakointi, tupakkakalakot

- kodin tupakointia koskevat säännöt ja
  rajoitukset, tupakkaan liittyvät arvot,
  normit ja asenteet

Aika


Taulukko 1.
Katsauksen perustana oleva tutkimuskirjallisuus pääasiallisten tutkimuskohteen mukaan ryhmiteltyyn.

<table>
<thead>
<tr>
<th>Tutkimuskirjallisuus</th>
<th>Lukumäärä</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kansainvälinen tutkimuskirjallisuus¹</td>
<td>2</td>
</tr>
<tr>
<td>Katsaukset perhetekijöiden vaikutuksesta lasten tupakoiminta</td>
<td></td>
</tr>
<tr>
<td>Muut yleiset katsaukset lasten ja nuorten tupakoiminta vaikuttavista tekijöistä, joissa tarkasteltu myös perheitä</td>
<td>3</td>
</tr>
<tr>
<td>Tutkimuksia perherakenteen merkityksestä lasten tupakoiminta</td>
<td>5</td>
</tr>
<tr>
<td>Tutkimuksia vanhemmuuden ja perheen vuorovaikutussuhteiden merkityksestä lasten tupakoiminta</td>
<td>11</td>
</tr>
<tr>
<td>Tutkimuksia tupakkaspektiäisten perhetekijöiden vaikutuksesta lasten tupakoiminta</td>
<td>28</td>
</tr>
<tr>
<td>Suomalainen tutkimuskirjallisuus²</td>
<td>16</td>
</tr>
</tbody>
</table>

¹ Vaalaita 2000–2003 (syyskuu)
² Vaalaita 1962–2004


Taulukossa 1 on järjestelty tämän katsauksen perustana oleva tutkimuskirjallisuus pääasiallisen tutkimuskohteen mukaan ryhmiteltyyn. Yksittäinen tutkimus esiintyy taulukossa vain kerran. Tutkimuksia oli yhteensä 16 kappaleata.


Taulukkon 2 on koottu samoilla kriteereillä suomalaisista tutkimuksista lasten ja nuorten tupakoimista, joissa perhetekijöiden vaikutuksia on tutkittu.

PERHETEKIJÖIDEN VAikutukset SUOMALAISET NAUROTEEN TUPOKOINTITUTKIMUKSissa


Useissa tutkimuksissa on havaittu perherakenteen vahva yhteys tupakoiminta: Niiden nuorten...
<table>
<thead>
<tr>
<th>Turkinas</th>
<th>Aineisto ja menetelmä</th>
<th>Päätulos perheeksioiden osalta</th>
</tr>
</thead>
</table>

**Taulukko 2.**

Suomalaiset tutkimukset lasten ja nuorten tupakoimattomuudesta, joissa perheen osuus.
<table>
<thead>
<tr>
<th>Taulukko 2. jatkuu</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tutkimus</strong></td>
</tr>
</tbody>
</table>


POHDINTA


Asenteet ja yhteiset näkemykset luovat poljaa kodin tupakoainna koskeviin käytäntöihin. Kodin tupakoainnin liittyville saamolle ja rajoitteissa on merkitystä tupakoainnin alamemmin. Ne vai- kuttavat lasten käsityksiin sitä, mikä on sosiaali- lisestä hyväksyttyä käytätäntymistä ja mikä taas ei (Wakefield ym. 2000), samoin kuin yhteiskun-


Perheiden nostaminen tupakoinnin ehkäisy- työssä muiden toimenpiteiden tiille olisi tämä
In this review, existing information from national and international literature concerning the role of the family in children's smoking is examined. A common framework influencing children's smoking is presented, also illustrating family factors involved. Family has a key role in smoking initiation and continuation. Of the tobacco-specific family factors, parents' and siblings' smoking, and a negligent parental attitude toward smoking emerge as the strongest predictors for children's smoking. Looking at the common family factors, the probability of smoking has proved to be distinctly lower among children living in an intact family compared to children in other types of family. The relative importance of parenthood as a whole and of interactions within the family for smoking initiation has not yet been fully established.

**KIRJALLISUUS**


Heinilä K. Tupakoinnis vuosittain. WSOY, Porvoo 1962.


Lähi toimenpiteistä tupakoinnissa vähentämiseksi. 693/1976. URL: http://www.finlex.fi/fi/aki


