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EXPOSURE TO TOBACCO PROMOTION AMONG DUTCH ADOLESCENTS AND YOUNG ADULTS

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Abstract

In the last decades, the tobacco industry has deployed many marketing- and promotion strategies to attract youth, but because of legislation, fewer marketing strategies are legal in current days. Actually in this study we investigated to which degree the Dutch youth is still exposed to legal and illegal tobacco promotion strategies.

Through a cross-sectional telephone survey, exposure to tobacco promotion and cigarette pack displays was assessed in 2013 for a representative sample of Dutch youth aged 12 to 24 years (N=801). We also assessed for significant differences in gender, having ever smoked and age group - 12 to 17 years and 18 to 24 years. Using multiple binary logistic regression analysis we assessed for significant relationships between exposure and age, gender, education level, disposable income, having ever smoked, household smoking and friends smoking. In other binary regression models we assessed the relationship between exposure to tobacco promotion and having ever smoked, and the role of smoke-specific parenting in this.

Results show that Dutch youth is still relatively high exposed to tobacco promotion at events and festivals, in pubs, clubs, nightclubs and bars, at the supermarket, convenience stores, petrol stations and tobacco retailers, but also through media channels as movies, TV shows, on the internet and in video games. Lower levels are reported for exposure to tobacco promotion in smartphone applications, by email and regular mail, in public areas and for owning cigarette promotional items. In general we see that reported exposure to tobacco promotion is related to a higher chance of having ever smoked. Smoke-specific parenting seems to play a role in this, possibly as a moderator.

This research is primarily intended as exploratory research to see which tobacco promotion channels are used to influence adolescents, and which channels are used to a smaller extent. Out of these results we conclude that the tobacco industry still promotes their tobacco products to Dutch youth, also in illegal ways. Future research has to point out in detail what is happening in these various tobacco promotion channels.

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Introduction

In 2011 almost 19.000 Dutch people died from a smoking related disease (Gelder, Poos, & Zantinge, 2012). In 1953 the causal relationship between smoking and lung cancer became clear and from that moment on the general public became gradually aware of the enormous health risks of smoking (Brandt, 2012). Smoking is also related to other diseases as COPD, coronary heart diseases, heart failures, cancer and diabetes mellitus (Stivoro, 2012a) Additionally, smoking is associated with a lower quality of life, a higher absence due to sickness and more frequent use of healthcare. In 2003, 2 billion dollars was spent in the Netherlands on the national healthcare of smoking related diseases (Gelder, et al., 2012).

The prevalence of daily smokers in the Netherlands decreased in the last decades from about 60 percent of Dutch adults in 1958 (Centraal bureau voor de statistiek, 2011b) to 26 percent in 2012 (Stivoro, 2012a). Figures show that in 2012 34 percent of the youth aged 11 to 19 years has ever smoked (Stivoro, 2012b). 17% of this age group has smoked in the past 4 weeks (Stivoro, 2012b). 31 percent of the young adults aged 20 to 24 years has ever smoked (Stivoro, 2011a). The prevalence of smoking among boys (27%) is nowadays a little higher than that among girls (23 percent) (Stivoro, 2011a), and it is more common that lower educated adolescents smoke (29%) than higher educated adolescents do (18%) (Stivoro, 2011b).

Characteristics of the tobacco product can allure the younger person to start experimenting or continue smoking; for example the price of the product and attractive advertisements to promote the product (Pieterse & Willemsen, 2005). The tobacco industry plays an important role in this process. Despite the restricted tobacco legislation nowadays, the tobacco industry still promotes her products. Youth, aged 12 to 24, are an important target group for the tobacco industry (Cortese, Lewis, & Ling, 2009). So far, there has been no research in the Netherlands yet on the extent to which tobacco promotion occurs. The primary goal of this research is to investigate to which degree the Dutch youth are still exposed to tobacco promotion both in legal and illegal ways. We replicate an Australian research of Perez et al. (2012) and want to find out to which degree the Dutch results are comparable to these results.

Tactics and strategies

In the last decades, the tobacco industry has deployed many marketing- and promotion strategies to attract younger people. To give an idea what the Dutch youth can be exposed to,

we will introduce some of the recently used marketing tactics and strategies of the tobacco industry. The marketing for tobacco products focuses on four important characteristics: the product, the price, the place and the promotion (Anderson, Hastings, & MacFadyen, 2002). Through the variation in these characteristics, the tobacco industry targets different groups, for example young people. The tobacco industry did extensive research on smoking behaviour of young people, to associate their specific tobacco brand with their target group (Coombs, Bond, Van, & Daube, 2011; Ibrahim, 2010).

Tobacco products are varied by the tobacco industry through the addition of different amounts of nicotine, tar and by including other ingredients which determine the variation and composition of the cigarette (Anderson, et al., 2002). Besides the content of the product, also the package of the product plays an important role - fashionable, colourful designs are more attractive to young people (Anderson, et al., 2002; Binesh, 2011; Carpenter, Wayne, Pauly, Koh, & Connolly, 2005; DiFranza, Clark, & Pollay, 2003), although this is less since the mandatory notable health warnings on the packages (Binesh, 2011; Coombs, et al., 2011). The price of the tobacco product is another important element in the marketing strategies of the tobacco industry (Amsterdam, Opperhuizen, Sleijffers, & Talhout, 2009; Anderson, et al., 2002; DiFranza, et al., 2003). Adolescents are more likely to buy a cheaper looking case with ten cigarettes, than the same package with twenty cigarettes (Anderson, et al., 2002).

In the current study we will mainly discuss promotion- and advertisement techniques of the tobacco industry which we divide into the categories a) places (that can be visited), b) media channels and c) cigarette pack displays.

Firstly, in places that can be visited, the placement of the tobacco product is an important element in the marketing strategies used by the tobacco industry. Tobacco products are offered at various locations to be available for the largest possible group (Anderson, et al., 2002). The strategic placement of the products at these locations is an important focus in the marketing of tobacco products. Retailers are also involved in the marketing process. The tobacco industry stimulates retailers to promote their tobacco brand through a comprehensive range of promotion materials. Special sale teams visit the retailers to strengthen the position of their products in the shop (Anderson, et al., 2002). Furthermore, research of tobacco industry archives (Ling & Glantz, 2002) shows that the tobacco industry has focused on young people by matching their marketing strategies to adolescent activities, for example at work, school, universities, but especially in bars and nightclubs. These promotion strategies are an important element in building brand loyalty among adolescents (Katz & Lavack, 2002).

Secondly we describe the used tactics and strategies by the tobacco industry through media channels. An important way of promotion is the placement of smoking in movies (Hunt, Henderson, Wight, & Sargent, 2011; Ibrahim, 2010; Pierce et al., 2010). Adolescents with high exposure to film smoking are more likely to have ever smoked than those with low exposure (Hunt, et al., 2011). Tobacco industry documents suggest that the tobacco industry was aware of the strength of displaying smoke and cigarettes in movies and other television programs. In the past the tobacco industry paid film producers for the placement of their products in movies (product placement) and provided free products for attributes or personal use of the actors (Harper & Martin, 2002).

Furthermore, the developments of the technology around the year 2000 ensured that the tobacco industry has shifted their marketing and promotion partially to Web 2.0 technologies (Ibrahim, 2010). Harper and Martin (2002) found evidence that the tobacco industry developed websites that are attractive to adolescents, featuring for example free cards for sponsored fashion shows or music events. The young people, who have to register themselves before they can view the website, are an important source of data for the tobacco industry and in this way they keep the adolescents updated about upcoming events and sales, like discount vouchers, free gifts and free samples of new products (Anderson, et al., 2002; Harper & Martin, 2002). Jenssen, Klein, Salazar, Daluga and DiClemente (2009) investigated the extent to which young people are exposed to tobacco promotion on the internet. 346 participants, aged 14 to 17 visited 1.2 million webpages, of which 0.72 percent contained tobacco content. An important finding in this research is that certain webpages contain considerably more tobacco advertisements than other websites; 53 percent of the pro-tobacco information came from social network sites, such as MySpace (Jenssen, Klein, Salazar, Daluga, & DiClemente, 2009).

Since the rise of the smartphone, this seems to be an important marketing tool for the tobacco industry to reach adolescents (BinDihm, Freeman, & Trevena, 2012). Bindihm et al. (2012) investigated the available pro-smoking applications at the Apple- and Android store and found 107 pro-smoking applications in total. The available pro-smoking applications spread out over a number of themes, like applications which contained information about selling points of tobacco products and provided information about certain brands, or applications which fight anti-smoking policy, applications which contain backgrounds or themes for your smartphone or smoke simulation applications (BinDihm, et al., 2012).

Another form of marketing we include in the current study is getting involved in the promotion of a tobacco product. Research shows that getting involved in the promotion of a

tobacco product, for example to get a gadget with a tobacco logo, stimulates smoking among young people (Biener & Siegel, 2000; Harper & Martin, 2002).

Furthermore, the selling points of tobacco products point-of-sale displays play an important role (MacKintosh, Moodie, & Hastings, 2012). MacKintosh et al. (2012) have conducted cross-sectional research on non-smoking adolescents in the United States, aged 11 to 16, and found that both notification of the displays ($p < .05$) and attraction to the displays ($p < .001$) is associated with a higher sensitivity for smoking. The majority of the non-smoking respondents (81 percent) indicated to notice the tobacco displays in the stores and 17 percent indicated to feel attracted to the point-of-sale displays. These findings suggest that non-smokers, even though they have no reason to notice the display, are still vulnerable to them (MacKintosh, et al., 2012).

Dutch legislation

Marketing strategies currently used by the tobacco industry can be divided into two types: 1) legal marketing strategies and 2) illegal marketing strategies. Whether a strategy is illegal differs between countries and states. For this research it is relevant to know which marketing strategies are legal or illegal in the Netherlands. In 1990 the Tobacco Law was introduced in the Netherlands (Rijksoverheid, 1998). In 2002 a revised Tobacco Law was implemented. This included a ban on advertising and promotion of tobacco products. In order to give an overview of this, we divided this into the price of the product, point-of-sale (included placement), restrictions for the product itself and promotion and advertisement restrictions.

When we look at the costs, the selling price of the tobacco products has increased during the last decades (Centraal bureau voor de statistiek, 2012c), caused by the taxes which are meant to discourage smoking and provide income to the government (Centraal bureau voor de statistiek, 2012c).

Cigarettes are sold through fewer points-of-sale; nowadays it is not allowed to sell tobacco products in government buildings, including health care, social services, art and culture, sports, social-cultural work and education (Rijksoverheid, 2012a, 2012b). Cigarettes on points-of-sale have to be presented against a neutral background, with a normal price display (Rijksoverheid, 2012b). A tobacconist can be a separate shop or a place in a supermarket or warehouse divided from the other part of the shop (Ministerie van Volksgezondheid Welzijn en Sport, 2002). In a tobacconist there are strict rules for advertisement(Rijksoverheid, 1998).

For the content of the tobacco products special guidelines are introduced. A cigarette may not contain more than 10 mg tar, 1 mg nicotine and 10 mg monoxide (Ministerie van Volksgezondheid Welzijn en Sport, 2002) and the exact quantities have to be displayed at the tobacco product package.

Promotion restrictions which are included in the law relate to every form of tobacco advertisement. Nowadays every form of tobacco advertisement is prohibited, except in a tobacconist. Advertisement is defined as, 'each action in the economic spheres, aiming at stimulating the selling of tobacco products and each form of commercial communication that, either directly or indirectly, aims at or leads to the publication or recommendation of a tobacco product, including advertisements that, without naming the tobacco product directly, attempt to avoid the advertisement ban by using a name, brand, symbol or any other distinctive sign of a tobacco product' (Rijksoverheid, 2012b, p. article 1d).

Sponsoring of events is forbidden and tobacco products may not be given away as promotion samples (Rijksoverheid, 2012a, 2012b). There is an advertising ban for tobacco in printed media (Ministerie van Volksgezondheid Welzijn en Sport, 2002). The Dutch tobacco law also describes that the use of names, brands or other distinctive signs which give an impression to the public that it is sponsored by the tobacco industry is not allowed either (Rijksoverheid, 1998).

For the package of the tobacco product special guidelines were introduced, the European tobacco guidelines state that a warning at the front should cover 30 percent of the package and at the back 40 percent (Ministerie van Volksgezondheid Welzijn en Sport, 2002).

Despite the marketing restrictions, the tobacco industry still stimulates smoking in direct and indirect ways. Research shows that various marketing strategies are still used to reach young people (Coombs, et al., 2011; Ibrahim, 2010). How much the tobacco industry spends on marketing- and promotion strategies in the Netherlands is not known, but worldwide the promotional expenditures by the tobacco industry annually cost billions of dollars (Ibrahim, 2010). This suggests that also in the Netherlands there will be some exposure to tobacco promotion.

Legislation of New South Wales

To compare the exposure of Dutch youth to various tobacco promotion channels with the results of Perez et al. (2012), we give an overview of the most important differences concerning tobacco promotional- and placement strategies legislation between the Netherlands and New South Wales (NSW) – the state where this research has been carried

out. As the NSW fieldwork took place in June 2010, the legislation at that time was taken and compared with the Dutch legislation of 2013. An important aspect of this comparison is that Australia is a worldwide precursor in the field of tobacco legislation, as it was in 2012 the first country in the world to require that tobacco products be sold in olive-colored plain packaging (Rimmer, 2013).

While in the Netherlands it is forbidden to sell cigarettes under age 16, in New South Wales it is forbidden for a person under the age of 18 to buy cigarettes (New South Wales Government, 2013). Six months before the field research of Perez et al. (2012), a point-of-sale display ban is introduced for large retailers (more than 50 employees) (Perez, et al., 2012). The new regulations state that tobacco products must be stored out of sight, so that they cannot be seen by the public from inside or outside the retail premises (Perez, et al., 2012). Later in that year this also became forbidden for other store types, but at the moment of the field work this was only the case for large retailers (Perez, et al., 2012). So the most important differences in legislation for the current study are a ban on cigarette sale displays for large retailers and the age limit for buying cigarettes.

Perez et al (2012) investigated to which degree adolescents (aged 12-17 years) and young adults (aged 18-24 years) *(N* = 801) have been exposed to tobacco promotion at various locations. Overall, a substantial proportion of the young people surveyed reported seeing tobacco promotion sometimes or often in the last month in most of the locations. The highest rate was for seeing people smoking in movies (77%) and the lowest was for seeing tobacco brands, company names or logos on the internet (20%).

In this study we want to investigate: "To which degree are the Dutch adolescents still exposed to tobacco promotion through various channels?" (1) Besides investigating to which degree the Dutch youth are still exposed to tobacco promotion, we want to investigate which characteristics of the adolescent or young adult will increase the risk of exposure to tobacco promotion, like age, gender, education level, disposable income, having ever smoked, household smoking and friends smoking (2). Both reported exposure to tobacco promotion channels and the possible characteristics of the adolescent or young adult which could increase the risk of exposure to tobacco promotion will be compared with the results of New South Wales(3). Furthermore, we will investigate whether exposure to tobacco promotion is associated with having ever smoked (4).

Smoke-specific parenting

Smoke-specific parenting practices aim at reducing adolescent smoking (Darling & Steinberg, 1993). Most of the studies on this subject focus on general parenting practices. However, more smoke-specific parenting practices may also discourage or prevent children from smoking intention (Chassin, Presson, Rose, & Sherman, 1998). Smoke-specific parenting is an important predictor for adolescent smoking (Bricker, Leroux, Andersen, Rajan, & Peterson Jr, 2005). The presence of anti-smoking rules in the house and more frequent parent-child communication about smoking can lead to reduced levels of adolescent smoking (Andersen, Leroux, Bricker, Rajan, & Peterson Jr, 2004). Research by Harakeh, Scholte, De Vries and Engels (2005) confirms that frequency and quality of communication about smoking protects against adolescent smoking and in this research this association is not moderated by birth order, parents smoking or gender of the adolescent. Smoke-specific parenting can include setting rules not to smoke at home, establishing a non-smoking agreement with the children or discussing smoking-related topics (Engels & Willemsen, 2004).

In this research we want to see whether there is an interaction between exposure to tobacco promotions and –advertisements and smoke-specific parenting on smoking status. (5).

Methods

Design

Exposure to tobacco promotion was assessed by a representative sample of Dutch adolescents and young adults aged 12-24 years (N = 801). This study was financed by STIVORO, the Dutch expertise centre on tobacco control and KWF, the Dutch cancer society. The Dutch youth were interviewed over the telephone by a Dutch research firm. Households were recruited by a random digit sample, consisting of land line- and mobile phone numbers. The adolescents or young adults were randomly selected through selecting the *n*-th year oldest of the target population in the household. Permission was obtained from the parents of children from 12 to 18 years old, before conducting each interview. Data collection took place between March 26th and April 26th 2013. Before starting the fieldwork the questionnaire was piloted in the survey population. The questionnaire was approved by the Medical Ethics Committee of the University of Twente.

Measurements

For this research we selected and translated relevant questions from the survey used in the research by Perez et al. (2012) conducted in 2010 in New-South-Wales (Australia). Furthermore, based on literature review, some new questions were added about exposure to tobacco promotion in smartphone applications (BinDihm, et al., 2012), owning cigarette promotional items (Gilpin, White, Messer, & Pierce, 2007), exposure to tobacco promotion in public areas and receiving tobacco-related mail or email (Harris et al., 2006). We also added some questions for the measurement of smoke-specific parenting (Harakeh, Engels, Den Exter Blokland, Scholte, & Vermulst, 2009).

Individual characteristics. The age, gender, region, living situation, education level and disposable income were recorded. Region was measured by zip code, which was later on divided in categories; the big cities (Amsterdam, Rotterdam, Den Haag, Utrecht) versus the rest of the Netherlands. Education level was a categorical question with the response options divided into Dutch education opportunities. The different categories used for this research were primary school, low education (Mavo/ Lbo/ VMBO and MBO), middle education (Havo, HBO/ Bachelor) and high education level (VWO/ Atheneum/ Gymnasium, WO/ Master). The amount of disposable income was measured by asking the participants how much money they had available during a normal week to spend on themselves, with the response categories a) less than €50 a week b) €50 to €100 a week, c) more than €100 a week.

Also, the time spent watching television and time spent on the internet were reported in minutes per day.

Smoking status. A distinction was made between current smokers, ex-smokers, experimenters, susceptible- and non-susceptible non-smokers. For this, we used the classification of Perez et al. (2012). Current smokers were categorized as people who had smoked cigarettes during the past month. Ex-smokers were the participants who had ever smoked cigarettes, but not in the past month, plus they had smoked 100 or more cigarettes during their lifetime. Participants were categorized as experimenters when they had ever smoked cigarettes, but not in the past month and they had smoked in total less than 100 cigarettes during their lifetime. Non-smokers were those people who had never had a puff of a cigarette and they were divided into two groups. Susceptible non-smokers answered at least at one of the next three questions with anything but 'definitely no', while non-susceptible non-smokers answered all three items with 'definitely no'. The smoking susceptibility items used were "Do you think you will try cigarettes sometime soon?", "Do you think you will try cigarettes sometime in the next year?" and "If a friend offered you a cigarette would you try it?" (definitely not, probably not, probably, definitely). These first two questions reflect both the intention construct as stated in the Theory of Planned Behaviour (Ajzen, 1991) and the last question is connected with the Willingness Model of Gibbons and Gerrard (Gibbons & Gerrard, 1995) which is a successful predictor of smoke intention (Gerrard, Gibbons, Stock, Vande Lune, & Cleveland, 2005).

Exposure to smokers. We evaluated to which degree the participant was exposed to smoking in the household by asking "How many people in your household are currently smokers?". The participant was also asked how many of the participant's five closest friends smoked. These questions reflect the observational learning component in Bandura's Social Cognitive Theory (Bandura, 1971).

Smoke-specific parenting. For the measurement of smoke-specific parenting we asked some questions in different domains, derived from smoke-specific parenting research of Harakeh, Engels, Den Exter Blokland, Scholte en Vermulst (2009). We asked the participants whether they had a non-smoking agreement ("Did you have a non-smoking agreement?"), with the answer categories yes or no. Also, we asked for frequency of smoke-specific talking by the question "How often did you talk with your parents about the negative consequences of smoking?", with a 4-point-scale from never (1) to often (4). Moreover, we added two questions to investigate the quality of the smoke-specific communication with their parents: "When my parents and I talk about smoking I feel they take me seriously", with a 4-point-

scale from never (1) to often (4) and "Did you talk with your parents about the negative consequences of the tobacco industry or tobacco promotion in the past 12 months?" with the answer categories yes or no.

Perceived exposure to tobacco promotion. The self-reported exposure of the Dutch adolescents to tobacco promotion was assessed for the last month. We used the questionnaire of Perez et al. (2012) as a starting point for our questionnaire and added some questions. The participants were asked about the perceived exposure to tobacco promotion at the subject's 1) promotion and advertising at a) events or festivals and b) pubs, clubs, nightclubs or bars, 2) tobacco promotion on the internet 3) people smoking cigarettes in a) movies, b) TV shows, c) video games, d) on the internet and 4) displays of cigarette packs for sale at a) large supermarkets (defined for participants as having more than five cash registers), b) grocery stores or small supermarkets c) convenience stores and d) service or petrol stations (Perez, et al., 2012).

We added questions about the exposure to tobacco promotion in smartphone applications ("How often did you download an application on your smartphone which contained cigarettes, tobacco manufacture names or -logos?"), owning cigarette promotional items ("Some tobacco manufacturers design clothes, caps, bags or other items with their brand on it. How often did you receive or buy an item which contained a tobacco brand or logo on it in the past 12 months?"), receiving tobacco-related mail or email ("Did you receive mail or email promoting tobacco in the past 12 months?") and whether they were addressed by someone from the tobacco industry in public areas or whether they received free tobacco samples in the past 12 months. ("Were you ever approached on the street or in another public area by someone who promoted cigarettes or shag in the past 12 months or by someone who gave you a free sample?"). The answers were measured on a 5-point-scale from never (1) to often (4).

We decided to divide this data in three topics; 1) exposure to tobacco promotion in places that can be visited (events/ festivals, pubs/ clubs/ nightclubs/ bars, supermarket, convenience store, petrol station, tobacco retailers and promotion in public areas), 2) exposure to tobacco promotion through media channels (internet, smartphone applications, movies, television shows, video games, mail and email – and we included owning cigarette promotional items in this part as well) , 3) exposure to cigarette pack displays at points-of-sale.

Outcome measures

The tobacco promotion channels (except for cigarette pack displays) were recoded into binary exposure variables for the response categories exposure (sometimes/ often) and no exposure (never/ rarely). The respondents who answered that they did not know whether they had seen the promotions, were coded 'no exposure'.

Frequency of visits to the store type and the frequency of exposure to cigarette pack displays at that store were multiplied to create a combined numeric cigarette pack display exposure score. The following categories were used: low exposure if participants never or rarely visited that store type or never or rarely saw cigarette pack displays, high exposure in combinations of sometimes and often or often and often in frequency of visits and exposure to cigarette pack displays and medium exposure for all the other combinations of store visit and frequency of seeing package displays.

For the multivariate analysis, the outcome variable for exposure to cigarette pack displays in stores was a single binary variable coded high exposure (versus not high) for the exposure score (as calculated above) aggregated over all store types. High exposure was defined as being in the top quartile of the total exposure score.

Besides smoke-specific parenting we recoded the items frequency of smoke-specific talking with their parents and the quality of smoke-specific communication in a binary variable for the categories sometimes/ often (yes) or never/ rarely (no).

Data analysis

We generated descriptive statistics for the tobacco promotion channels by gender, age group and smoking status (having ever smoked). Bivariate comparisons of level of exposure over all promotion channels across gender and age were examined using chi-square statistics. The same was done for the age groups 12 to 15 years and 16 to 24 years, because in the Netherlands it was legal to buy cigarettes at age 16 instead of 18, which is the case in Australia (New South Wales Government, 2013; Rijksoverheid, 2012b).

We used multiple logistic regression analysis to estimate the adjusted chance of participants reporting seeing each of the different types of tobacco promotion sometimes or often. We only include tobacco promotion channels which have the exposure and no exposure table cell counts of $n > 25$ (see table 2a till 2c). Each model included the following possible correlators: age group (12-17, 18-24 years), gender, education, disposable income, ever having smoked, household smokers and friends smoking. For outcome variables examining tobacco promotion on the internet and in video games, hours per day spent on the internet was

also included in the model, and the model examining depiction of people smoking in TV shows also included time spent watching TV (in hours per day). Contrasts with the reference category for multiple category predictor variables were Bonferroni adjusted.

We used binary logistic regression analysis to find out to which degree exposure to tobacco promotion was related to smoking behaviour and if there was a significant relationship, we looked whether there was an interaction between smoke-specific parenting and exposure to tobacco promotion to control for moderating effects. For interaction we looked at the differences between high exposure of tobacco promotion and high smoke-specific parenting vs. the rest of the combinations (low exposure of tobacco promotion versus high smoke-specific parenting; low exposure of tobacco promotion vs. low smoke-specific parenting; high exposure of tobacco promotion vs. low smoke-specific parenting).

The data was weighted to the Dutch population for known age, sex and region (urbanized areas; Amsterdam, the Hague, Rotterdam, Utrecht vs. the rest of the country) distributions for 12-24 year olds within the Netherlands from the 2010 Central Bureau of Statistics (Centraal bureau voor de statistiek, 2012a). All analyses were conducted using SPSS 21.0 and used a threshold of alpha at .05 for statistical significance (except for the multivariate analysis of exposure to tobacco promotion, for which we used a .01 statistical significance level for including the models).

Description of the sample

The socio-demographic characteristics of the sample of Dutch participants (N = 801) categorized by age group are shown in table 1. For the description of the sample unweighted data was used. From now on we will use ‘adolescents’ for youth aged 12 to 17 years and ‘young adults’ for youth aged 18 to 24 years, unless stated otherwise. Almost half of the sample consisted of men (n = 400) and the average age was 17.89 years. Most of the adolescents followed secondary education and the majority of young adults followed a study. The majority of the participants lived with their parents, guardians or other family (88.6%), although this percentage was higher for adolescents (*99.2%*) than for young adults (*79.3%*). This is a little higher than what the national figures of the Dutch Central Statistical Office show us; 97.14% of the Dutch adolescents are still living at their parental home, and 59.67% of the young adults are still living at their parental home (Centraal bureau voor de statistiek, 2012b). Almost one-fifth of the participants were currently smokers (19%) and about the same amount of participants were classified as experimental smokers (21%). Nevertheless most participants were non-susceptible non-smokers (43.6%). There were less people

currently smokers in the age group of adolescents (7.2%) than in the group of young adults (29.3%).

Almost two-fifth of the participants had no smoking friends (37.5%) and slightly fewer participants had three or more smoking friends (with a maximum of 5) (33.7%). Most participants did not have a smoking person in their household (55.2%). In the current study adolescents spent an average time of 2.78 hours a day on the internet. Young adults spent on average a little more time (3.51 hours a day) on the internet. Adolescents watched on average 1.86 hours of television a day, which was approximately equal to young adults who watched 1.70 hours a day.

Table 1.
Sampling distribution (based on unweighted data)

Characteristic	Dutch sample					New South Wales sample (Perez et al. 2012)				
	Adolescents n = 375		Young adults n = 426		Total	Adolescents n=518		Young adults n=482		Total
	n	%	n	%	%	n	%	n	%	%
Gender										
Male	188	50.1	212	49.8	49.9	258	49.8	240	49.8	49.8
Female	187	49.9	214	50.2	50.1	260	50.2	242	50.2	50.2
Region										
G4	19	5.2	38	9.0	7.2					
Rest of NL	349	94.8	382	91.0	92.8					
Education										
Primary school	28	7.5	0	0	3.5					
Low (Mavo/ Lbo/ VMBO/ MBO)	125	33.3	151	34.5	34.5					
Mid (Havo/ HBO/ bachelor)	103	27.5	180	42.3	35.3					
High (Vwo/ atheneum/ gymnasium/ WO/ master)	118	31.5	94	22.1	26.5					
Unknown	1	0.3	1	0.2	0.1					
Living arrangement										
Live with parent(s)/ guardians/ family	372	99.2	338	79.3	88.6	511	98.8	402	83.8	91.6
Live with a spouse/ am a sole parent/ share with others/ / live alone/ other	3	0.8	88	20.7	11.4	6	1.2	78	16.25	8.4
Smoking status										
Current smoker	27	7.2	125	29.3	19	44	8.5	125	25.9	16.9
Non-susceptible non-smoker	209	55.7	140	32.9	43.6	322	62.2	155	32.2	47.7
Susceptible non-smoker	91	24.3	15	3.5	13.2	84	16.2	23	4.8	10.7
Ex-smoker	2	0.5	24	5.6	3.2	1	0.2	23	4.8	2.4
Experimenter	43	11.5	118	27.7	20.1	67	12.9	156	32.4	22.3
Friends smoking ++										
None	209	55.7	91	21.4	37.5	331	63.9	149	30.9	48.0
1 friend	42	11.2	76	17.8	14.7	73	14.1	101	21.0	17.4
2 friends	36	9.6	77	18.1	14.1	55	10.6	81	16.8	13.6
3+ friends	88	23.5	182	42.7	33.7	59	11.4	151	31.3	21.0
Household smoking										
None	244	65.1	198	46.5	55.2	380	73.4	285	59.1	66.5

Characteristic	Dutch sample					New South Wales sample (Perez et al. 2012)				
	Adolescents n = 375		Young adults n = 426		Total	Adolescents n=518		Young adults n=482		Total
1 person	80	21.3	101	23.7	22.6	96	18.5	133	27.6	22.9
2+ people	51	13.6	127	29.8	22.2	42	8.1	64	13.3	10.6
Disposable income										
None	19	5.1	5	1.2	3.0	51	9.9	9	1.9	6
<=€50	298	79.5	82	19.2	47.4	332	64.1	76	15.8	40.8
€50-€100	38	10.1	138	32.4	22.0	68	13.1	70	14.5	13.8
€100+	14	3.7	173	40.6	23.3	48	9.3	310	64.3	35.8
Unknown	6	1.6	28	6.6	4.2	19	3.7	17	3.5	3.6
Internet use +++	M	mean	M	mean	mean	M	M	M	mean	mean
(hours per day)	2.00	2.78	3.00	3.51	3.17	2.0	2.01	2.0	2.86	2.47
TV use +++										
(hours per day)	2.00	1.86	1.00	1.70	1.77	1.5	1.81	1.5	1.73	1.77

+smoke status: missing n=7, ++How many of five closest friends smoke, +++Values exceeding 10 are recoded to 10h.
M = median

Socio-demographic characteristics compared with Perez et al. (2012). Concerning socio-demographic characteristics, a difference between this study and Perez et al.'s study is that Perez et al. (2012) reported SES of the participants, while in this research we asked the participants for their level of education. Gender distribution was for both samples approximately similar. When comparing the living situations of the Dutch participants with the NSW participants, there were relatively more Dutch participants living without their parents, guardians or family (11.4%) than was the case in NSW (8.4%), primarily for young adults.

There were some differences in smoking status between Dutch and NSW participants in the different studies. Prevalence of current smokers in the Dutch sample was higher (19% vs. 16.9%). In the age group of adolescents 7.2% was currently a smoker, while Perez et al. reported a percentage of 8.5%. Dutch young adults were more current smokers than is the case for NSW young adults (29.3% vs. 25.9%). In the Dutch study the percentage of susceptible non-smokers was a little higher (13.2% vs. 10.7%) than in the NSW study, while the NSW participants are more often experimental smokers (22.3% vs. 20.1%).

In New South Wales more of the participants had no smoking friends, than was the case in the Dutch sample (48.0% vs. 37.5%), this was the same for household smoking (66.5%, vs. 55.2%). Internet use in hours per day was higher for the Dutch sample (3.17 hours per day vs. 2.47 hours per day) and there were no differences in TV use in hours for both studies.

Results

PART I - Bivariate analyses of tobacco promotion

The proportion of participants reporting having seen tobacco promotion in the past month and the results of the bivariate comparisons of tobacco promotion exposure across age group (12-17 and 18-24 years), gender and smoking status are shown in Table 2a (places that can be visited), 2b (media channels) and 2c (cigarette pack displays at points-of-sale). A substantial proportion of the participants reported seeing tobacco promotion in the last month in a major number of the channels. The highest proportion of promotion was reported for seeing cigarettes or tobacco promotion in movies (77.4%). The lowest proportion was reported for seeing tobacco promotion in the regular mail or in emails (1.5%).

Places that can be visited. Youth reported different exposure levels for the different channels (see table 2a). More than one third of the sample reported exposure to tobacco promotion in pubs, clubs, nightclubs and bars (34.4%) and 24.0% at events or festivals. At the supermarket 23.9% of the youth reported exposure to tobacco promotion, which is a little lower than the exposure level at convenience stores (27.1%). 30.3% of the sample reported that they have been exposed to tobacco promotion at petrol stations, which is 33.4% at tobacco retailers and 3.1% in public areas.

Young adults saw significantly more tobacco promotion at convenience stores (31.0% vs. 22.3%, $p = .007$) and at tobacco retailers (37.7% vs. 28.2%, $p = .005$) than adolescents. Never smokers were significantly more exposed to tobacco promotion at supermarkets than participants who reported to have ever smoked (27.8% vs. 20.3%, $p = .016$). But ever smokers are significantly more exposed to tobacco promotion at tobacco retailers than never smokers are (41.2% vs. 25.2%, $p < .001$)

Table 2a.

Proportions in Netherlands exposed to forms of Tobacco Promotion in Places that can be visited by Gender and Age (N=801) - α<0.05

Exposure+	Male		Female		*p*	Adolescents		Young adults		*p*	Ever smoked %		Never smoked %		*p*	Total		Total Perez et al.
Promotions or advertising at places that can be visited	n	%	n	%		n	%	n	%		n	%	n	%		n	%	%
Pubs/clubs/ nightclubs/ bars++					.932					.320					.862			
No	206	65.4	192	65.8		138	68.3	260	64.0		237	65.8	160	65.0		398	65.5	69.2
Yes	109	34.6	100	34.2		64	31.7	146	36.0		123	34.2	86	35.0		209	34.4	30.8
Tobacco retailers (missing n = 2)					.500					**.005****					**<.001*****			
No	268	65.4	264	67.9		257	71.8	274	62.3		241	58.8	291	74.8		532	66.6	
Yes	142	34.6	125	32.1		101	28.2	166	37.7		169	41.2	98	25.2		267	33.4	
Petrol stations+					.219					.063					.192			
No	278	67.6	280	71.8		237	66.2	321	72.5		296	71.7	262	67.4		558	69.7	
Yes	133	32.4	110	28.2		121	33.8	122	27.5		117	28.3	127	32.6		243	30.3	
Convenience stores					.340					**.007****					.265			
No	294	71.4	290	74.6		279	77.7	305	69.0		292	71.2	291	74.8		584	72.9	
Yes	118	28.6	99	25.4		80	22.3	137	31.0		118	28.8	98	25.2		217	27.1	
Events/ festivals++					1.00					.075					.860			
No	279	76.4	264	76.5		224	73.0	319	79.0		285	76.8	258	76.1		543	76.5	77.5
Yes	86	23.8	81	23.9		83	27.0	85	21.0		86	23.4	81	24.3		167	24.0	22.5
Supermarkets					.160					.157					**.016***			
No	304	74.0	306	78.3		264	73.7	345	78.1		329	79.9	281	72.2		610	76.1	
Yes	107	26.0	85	21.7		94	26.3	97	21.9		84	20.3	108	27.8		192	23.9	
Public areas					.310					.065					.840			
No	402	97.6	375	96.2		342	95.5	434	98.0		400	97.1	377	96.7		776	96.9	
Yes	10	2.4	15	3.8		16	4.5	9	2.0		12	2.9	13	3.3		25	3.1	

+ 42,1% of the sample population did not visit a pub, club, nightclub or bar last month 67,7 % of this group were 12 till 16 years old.; 15,8% of the sample population did not visit a large supermarket last month, 22,1 % of the sample population did not visit a small supermarket last month; 38.7 % did not visit a convenience store last month; 37% did not visit a petrol station last month; 82,6% did not visit a tobacco retailer last month

++ For exposure to tobacco promotion at events and festivals only participants who reported that they did visit an event or festival in the past year were asked if they were exposed to tobacco promotion in the past month at these events or festivals; this is the same for exposure to tobacco promotion at pubs, clubs, nightclubs and bars, but then we asked if they were did visit one of these in the past month.

*p<.05 ; ** p<.01; *** p<.001

Media channels. The exposure levels reported for seeing cigarettes in movies (76.4%) and TV shows (49.6%) is higher than for seeing cigarettes on the internet (32.1%), in video games (21.9%) and for exposure to tobacco brands, company names or logos on the internet (21.1%) (See table 2b). More men than women reported to see cigarettes and tobacco promotion in TV shows (53.3% vs. 45,8%, $p = .034$) and in video games (34.7% vs. 8.5%, $p < .001$) . Adolescents reported to see more tobacco brands, company names or logos on the internet (26.2% vs. 16.5%, $p = .001$) than young adults. Moreover never smokers saw significantly more tobacco brands, company names and logos on the internet (26.2% vs. 16.5%, $p = .001$) and in TV shows (49.7% vs. 43.9%, $p = .001$) than ever smokers did.

Lower exposure levels are reported for exposure to tobacco brands, company names and logos in smartphone applications (2.7%), exposure to tobacco promotion via email (1.4%), regular mail (1.6%) and owning a cigarette promotion item (2.7%). Adolescents report more frequently that they saw tobacco promotion in the regular mail (2.8% vs. 0.7%, $p = .024$) or email (2.5% vs. 0.5%, $p = .015$) than young adults. Although the great majority of the participants reported not to own a cigarette promotion item, male participants (4.1%) did report more often that they owned a cigarette promotion item than female participants (1.3%) ($p = .016$).

Cigarette pack displays. (Table 2c) 64.5% of the youth reported high exposure to cigarette pack displays at the large supermarkets and this is 34.2% at the small supermarkets. At petrol stations 29.9% reported high exposure to cigarette pack displays and at convenience stores (14.5%) and tobacco retailers (5.4%) this percentage is lower. Men (35.8%) reported seeing cigarette pack displays in petrol stations more often than women (23.9%) ($p = .001$). Furthermore, young adults reported more exposure to cigarette pack displays at petrol stations (39.5% vs. 18.1%, $p < .001$) and at tobacco retailers (7.9% vs. 2.5%, $p < .001$) than adolescents. Ever smokers saw significantly more cigarette pack displays at petrol stations (40.0% vs. 19.3%, $p < .001$) and at tobacco retailers (8.3% vs. 2.6%, $p < .001$) than never smokers.

Table 2b.

Proportions in Netherlands exposed to forms of Tobacco Promotion at Media Channels by Gender and Age (N=801) - α<0.05

Exposure	Male %		Female %		*p*	Adolescents %		Young adults %		*p*	Ever smoked %		Never smoked %		*p*	Total		Total Perez et al.
Brands, company names or logos	n	%	n	%		n	%	n	%		n	%	n	%		n	%	%
Internet					.387					**.007****					**.001*****			
No	319	77.6	313	80.3		267	74.4	365	82.4		344	83.5	287	73.8		632	78.9	80.1
Yes	92	22.4	77	19.7		92	25.6	78	17.6		68	16.5	102	26.2		169	21.1	19.9
Smartphone applications+					.497					**.004****					.358			
No	346	97.7	342	96.6		299	95.2	389	99.0		369	97.9	319	96.7		688	97.3	
Yes	8	2.3	11	3.1		15	4.8	4	1.0		8	2.1	11	3.3		19	2.7	
People smoking cigarettes																		
Movies					.245					.557					.406			
No	90	21.8	99	25.4		88	24.6	100	22.6		92	22.3	97	24.9		189	23.6	22.8
Yes	322	78.2	291	74.6		270	75.4	342	77.4		320	77.7	292	75.1		613	76.4	77.2
TV shows					**.034***					.055					**.001*****			
No	192	46.7	212	54.2		167	46.5	236	53.4		231	56.1	172	44.2		404	50.4	32.0
Yes	219	53.3	179	45.8		192	53.5	206	46.6		181	43.9	217	49.7		398	49.6	68.0
Internet					.096					.648					.762			
No	268	65.2	276	70.8		247	68.8	297	67.2		277	67.2	266	68.4		544	67.9	74.4
Yes	143	34.8	114	29.2		112	31.2	145	32.8		135	32.8	123	31.6		257	32.1	25.6
Video games (missing value = 2)					**<.001*****					.344					.072			
No	267	65.3	357	91.5		275	76.6	349	79.5		309	75.6	315	81.0		624	78.1	76.8
Yes	142	34.7	33	8.5		84	23.4	90	20.5		100	24.4	74	19.0		175	21.9	23.3
Promotion-item					**.016***					.673					.132			
No	394	95.9	385	98.7		350	97.5	429	96.8		397	96.4	382	98.2		779	97.3	
Yes	17	4.1	5	1.3		9	2.5	14	3.2		15	3.6	7	1.8		22	2.7	
Regular mail					1.000					**.024***					.166			
No	404	98.3	384	98.5		349	97.2	439	99.3		408	99.0	380	97.7		788	98.4	
Yes	7	1.7	6	1.5		10	2.8	3	0.7		4	1.0	9	2.3		13	1.6	
Email					1.000					**.015***					1.000			
No	405	98.5	385	98.7		350	97.5	440	99.5		406	98.5	384	98.7		790	98.6	
Yes	6	1.5	5	1.3		9	2.5	2	0.5		6	1.5	5	1.3		11	1.4	

+Only participants who reported to have a smartphone were asked if they were exposed to tobacco promotion in smartphone applications - 11,7 % of the sample population did not have a smartphone

*p<.05 ; ** p<.01; *** p<.001

Table 2c.

Proportions in Netherlands exposed to Cigarette Pack Displays at points of sale by Gender and Age (N=801) – α < 0.05

Exposure	Male %		Female %		*p*	Adolescents %		Young adults %		*p*	Ever smoked %		Never smoked %		*p*	Total		Total Perez et al.
Cigarette pack displays	n	%	n	%		n	%	n	%		n	%	n	%		n	%	%
Large supermarkets+					.244					.406					.492			
Low	54	13.2	63	16.2		50	14.0	67	15.2		64	15.6	53	13.7		117	14.6	32.9
Med	92	22.4	70	18.0		81	22.7	81	18.3		77	18.7	85	22.0		162	20.3	31.9
High	261	63.7	254	65.5		223	62.5	292	66.1		267	65.0	248	64.1		515	64.5	35.1
Unknown	3	0.7	1	0.3		3	0.8	2	0.5		3	0.7	1	0.3		4	0.5	0.1
Small supermarkets+					.141					.411					.922			
Low	175	42.7	140	36.0		131	36.6	184	41.6		162	39.3	153	39.4		315	39.4	33.7
Med	96	23.4	111	28.5		102	28.5	106	24.0		111	26.9	97	25.0		207	25.9	34.4
High	138	33.7	135	34.7		123	34.4	150	33.9		137	33.3	136	35.1		273	34.2	31.8
Unknown	1	0.2	3	0.8		2	0.6	2	0.5		2	0.5	2	0.5		4	0.5	0.1
Petrol stations+					**.001*** **					**<.001 *** **					**<.001*** **			
Low	169	41.1	203	52.2		210	58.5	162	36.6		141	34.2	231	59.4		372	46.4	30.4
Med	94	22.9	93	23.9		84	23.4	104	23.5		105	25.5	83	21.3		188	23.4	33.3
High	147	35.8	93	23.9		65	18.1	175	39.5		165	40.0	75	19.3		240	29.9	36.3
Unknown	1	0.2	0	0.0		0	0.0	2	0.5		1	0.2	0	0.0		1	0.2	0
Convenience stores+					.638					.089					.868			
Low	249	60.6	236	60.5		233	65.1	252	57.0		245	59.5	240	61.9		485	60.6	36.5
Med	98	23.8	96	24.6		80	22.3	114	25.8		101	24.5	93	24.0		194	24.3	39.0
High	60	14.6	57	14.6		44	12.3	72	16.3		63	15.3	53	13.7		117	14.5	24.5
Unknown	4	1.0	1	0.3		1	0.3	4	0.9		3	0.7	2	0.5		5	0.6	0
Tobacco retailers+					.129					**<.001*** **					**<.001*** **			
Low	338	82.6	339	86.9		328	91.6	350	79.2		318	77.2	360	92.8		677	84.7	
Med	43	10.5	36	9.2		21	5.9	57	12.9		60	14.6	18	4.6		79	9.9	
High	28	6.8	15	3.8		9	2.5	35	7.9		34	8.3	10	2.6		43	5.4	
Unknown	0	0	0	0		0	0	0	0		0	0	0	0		0	0	

+15,8% of the sample population did not visit a large supermarket last month, 22,1 % of the sample population did not visit a small supermarket last month; 38.7 % did not visit a convenience store last month; 37% did not visit a petrol station last month; 82,6% did not visit a tobacco retailer last month

*p<.05 ; ** p<.01; *** p<.001

Age groups 12-15 and 16-18. When comparing the age groups 12 to 17 years and 18 to 24 years with the age groups 12 to 15 and 16 to 24, we see some significant differences. In the age group 12 to 17 years, youth reported to see significantly more tobacco brands, company names and logos on the internet than youth aged 18 to 24 years old did. (25.6% vs. 17.6%, p = .007) But when we split up the age groups in 12 to 15 and 16 to 24 years old, the age group of 16 to 24 years old report significantly more tobacco promotion seen on the internet (25.9% vs. 19.0, p = .030).

When we separated the age groups in 12 to 15 years and 16 to 24 years old, it showed that adolescents 12 to 15 years saw significantly more tobacco promotion at the supermarket (28.9% vs. 21.8%, p = .027) while this was not significant when divided in the age groups 12 to 17 years and 18 to 24 years. While there was no significant difference for seeing cigarettes in movies for the age groups 12 to 17 and 18 to 24 years, there was a significant difference when we split up the age groups in 12 to 15 and 16 to 24 years, in which case the youth aged 12 to 15 years reported that they saw cigarettes in movies less frequent than the older age group (70.7% vs. 78.9%, p = .014). There was no significant difference for exposure to tobacco promotion in public areas for the youth aged 12 to 17 years, but when we split up the age group in 12 to 15 years and 16 to 24 years, youth aged 16 to 24 years old reported significantly more tobacco promotion in public areas (3.8% vs. 2.4%, p = .015).

PART II - Multivariate analyses of tobacco promotion

Table 3a, b and c (see appendix A1a) shows the results of the significant adjusted models of exposure to tobacco promotion for the various channels. We used the same division as used in the chapter of bivariate analyses. In this paper only the significant models are included and we only included tobacco promotion channels that have in the previous section exposure and no exposure counts of n > 25 in the table cells. That means in this case that the models of exposure to tobacco promotion in pubs, clubs, nightclubs and bars (p = .181), and smartphone applications, tobacco promotion in public areas, receiving tobacco promotion via email and regular mail and owning cigarette promotional items are excluded.

Places that can be visited. Exposure to tobacco promotion at events and festivals is significantly related to age (p = .030), education (p = .001) , disposable income (p = .007) and friends who smoke (p = .017). The chance for exposure to tobacco promotion for young adults is more than 40% lower (OR = 0.56, p = .030) than for adolescents. Youth with a high education level have less chance to be exposed to tobacco promotion at events or festivals (*OR* = .31, p < .001). Also, adolescents and young adults with two friends who smoke have

more than double the chance that adolescents and young adults have when having no smoking friends (*OR* = 2.45, *p* = .003). For adolescents or young adults with more than two smoking friends this relationship is not significant.

Education (*p* = .001) , disposable income (*p* = .046) , smoking status (*p* = .005) and number of smoking friends (*p* = .024) are significantly related to exposure to tobacco promotion at supermarkets. Youth who have finished or are still in a middle education level have a lower chance to be exposed to tobacco promotion at supermarkets than youth who have finished or are still in low education level (*OR* = .59, *p* = .013). Youth who have a high education level have even a smaller chance than youth who have a low education level to be exposed to tobacco promotion at supermarkets (*OR* = .43, *p* = .001). In the same model of exposure to tobacco promotion at supermarkets, youth who reported that they have ever smoked have a more than 80% higher chance to report exposure than youth who have never smoked (*OR* = 1.87, *p* = .005). With regard to smoking friends, having two (*OR* = 1.89, *p* = .024) smoking friends is associated with higher exposure at supermarkets than having no smoking friends. This is not significant for youth with three or more smoking friends.

In the regression model of convenience stores only one correlator is found; smoking friends are significantly related to exposure to tobacco promotion (*p* = .025). Youth with one smoking friend have a more than two times higher chance than youth with no smoking friends for exposure (*OR* = 2.05, *p* = .007). And youth with three or more smoking friends also have a significantly higher chance than youth with no smoking friends (*OR* = 1.85, *p* = .011).

For exposure to tobacco promotion at tobacco retailers, friends smoking is significantly related in the model (*p* = .006). The chance for seeing tobacco promotion at tobacco retailers is more than two times higher for youth with three or more friends who smoke than for youth who have no smoking friends (*OR* = 2.18, *p* = .001).

For exposure to tobacco promotion at petrol stations education level is significantly related to exposure to tobacco promotion (*p* = .01). Youth who have a high education level reported less exposure to tobacco promotion at petrol stations than youth with a low education level (*OR* = .47, *p* = .001)

Media channels. Smoking status (p < .001) and household smoking (*p* = .041) are related to the exposure to promotion of tobacco brands, company names and logos on the internet. Ever smokers have a more than two times higher chance than non- smokers for seeing tobacco promotion on the internet (*OR* = 2.50, *p* < .001). Furthermore youth with two or more smokers in their household have a higher chance for exposure than youth with no smoking people in their household (*OR* = 1.82, *p* = .015).

For seeing cigarettes in movies having smoking friends is significantly related to exposure (p = .002). Youth with three or more smoking friends have a 2.5 times higher chance than youth with no smoking friends (OR = 2.54, p < .001).

For seeing cigarettes at the television, gender (p = .031) and smoking status (p = .001) are significantly related to exposure. Males have a higher risk of exposure than females and ever smokers have almost double the chance of exposure than never smokers (OR = 1.92, p = .001)

The chance for reporting exposure to cigarettes in video games is 80% less likely for female participants (OR = 0.16, p < .001). The chance for exposure through video games increased by 8% for every additional hour spent on the internet per day.

For exposure to tobacco promotion on the internet this increase is also 8% for every additional hour spent on the internet. The chance of reporting seeing people smoking on the internet is lower for women (OR = 0.72, p = .041). Besides, education is significantly related to reported seeing people smoke on the internet (p = .018). Youth who reported a middle education level have more chance to see people smoke on the internet than youth who reported a low education level (OR = 1.67, p = .006).

Cigarette pack displays. Household smoking (p = .012) and friends smoking (p = .003) are significantly related to exposure to cigarette pack displays. High exposure to cigarette pack displays was more likely for youth with one (OR = 1.77, p = .008) or more (OR = 1.69, p = .018) smoking persons in the household. For youth with three or more smoking friends high exposure to cigarette pack displays was more than two times as likely for youth with none smoking friends (OR = 2.39, p = .001).

PART III – Results compared with Perez et al.(2012).

When we compare these results with the results of Perez et al. (2012) we see some similarities and some differences.

Proportions exposed to forms of tobacco promotion by gender and age.

Places that can be visited. The exposure at events or festivals is proportionally comparable in both samples (24.0% in the Dutch sample vs. 22.5% in New South Wales). The participants of New South Wales (NSW) reported less exposure in pubs, nightclubs or bars than the Dutch participants (30.8% vs. 34.4%). For exposure to tobacco promotion at festivals/ events (p < .001), pubs/ clubs/ nightclubs and bars (p < .001) and petrol stations (p = .014) adolescents of NSW reported significantly more exposure than young adults did. This is not significant for the Dutch study.

Media channels. Exposure to tobacco brands, company names or logos occurs for 21.1% in the Dutch study and for 19.9% in the study of NSW. Reported exposure in movies is comparable for both studies (Dutch sample; 76.4%, NSW sample: 77.2%). 21.9% of the Dutch participants reported exposure to tobacco promotion in video games and this is 23.3% in the study of NSW. For television shows this percentage is a little lower in the Dutch study (49.6%) than in the study of NSW (68.0%). In NSW 25.6% of the participants reported seeing people smoke on the internet, which is lower than the 32.1% of the Dutch sample. Reported exposure to brands, company names or logos on the internet seems to be relatively the same, but in the Dutch study there is a significant difference where adolescents reported more exposure than young adults did ($p = .007$) and there was no significant difference found in the study of NSW. Dutch men reported significantly more often that they saw people smoking cigarettes on the television than Dutch women ($p = .034$), while in the study of NSW there was no significant difference between the genders. In both samples men saw significantly more frequently people smoking cigarettes in video games than women did ($p < .001$ for both studies).

Cigarette pack displays. In large supermarkets Dutch participants reported more often exposure to cigarette pack displays (64.5%) than was the case for the NSW participants (35.1%). Exposure to cigarette pack displays in small supermarkets is reported by 34.1% of the Dutch participants and by 31.8% of the NSW participants. In convenience stores the NSW participants reported more often exposure to cigarette pack displays (24.5%) than the Dutch participants did (14.5%). For reporting exposure to cigarette pack displays in petrol stations the percentages are a little lower in the Dutch study (29.9%) than in the study of NSW (36.3%).

Cigarette pack displays were more frequently seen by female NSW participants than by male NSW participants at large supermarkets ($p = .018$) and at small supermarkets ($p < .001$), while there was no significant difference in the Dutch study. Also for age there was a significant difference in NSW; adolescents were more often exposed to cigarette pack displays than young adults were at large supermarkets ($p < .001$) and at small supermarkets ($p = .001$). Women reported significantly more exposure to cigarette pack displays at convenience stores than men did in the NSW study ($p < .001$), while in the Dutch study there was no significant difference.

Multivariate analyses of tobacco promotion.

In the study conducted in New South Wales only a couple of regression models were significant ($\alpha < .05$), which we will compare with the results of the Dutch study. In the tables

(see appendix A1a) we adjusted the OR-value and *p*-value of the reported regression models in the NSW study only if the *p*-value was significant.

Places that can be visited. For exposure to tobacco promotion at events and festivals, having friends who smoke is significantly related in both studies (NSW sample, $p = .015$; Dutch sample, $p = .017$). NSW participants who had one smoking friend had an almost two times higher chance to exposure than participants with no smoking friends ($OR = 1.98$, $p = .006$). In the Dutch study this was not a significant relationship, but a participant with two smoking friends had a more than two times higher chance-ratio than participants who had no smoking friends ($OR = 2.45$, $p = .003$), which is not significant in the NSW study.

Media channels. In the Dutch study smoking status ($p < .001$) and household smoking ($p = .041$) are related to exposure to tobacco brands, company names and logos on the internet. Regular smokers have a 2.5 times higher chance-ratio than non-smokers have ($OR = 2.50$, $p < .001$). This relationship is also significant in the NSW study, but the chance-ratio is the other way around ($OR = 0.64$, $p = .027$), which means that regular smokers have a lower chance to exposure than non-smokers. In the NSW study age is also significantly related to exposure to tobacco brands, company names and logos on the internet. Young adults from NSW saw more than 50% less frequently tobacco brands, company names and logos on the internet than adolescents ($OR = 0.46$, $p < .001$).

Gender is significantly related to exposure to people smoking in video games in both studies. Men have a higher chance to exposure to smoking in video games than women, this is almost 80% higher for Dutch men than for Dutch women ($OR = 0.16$, $p < .001$) , and this difference is 70% for the NSW participants. ($OR = 0.28$, $p < .001$). Also, time spent on the internet is for both studies significantly related to exposure to tobacco promotion in video games. In both studies the chance for exposure through video games increased by 8% for every additional hour spent on the internet per day (NSW sample, $OR = 1.08$, $p = .030$; Dutch sample, $OR = 1.08$, $p = .001$).

Cigarette pack displays. Significant relationships found for exposure to cigarette pack displays at stores are household smoking and friends smoking in the Dutch study, while in the NSW study the significant correlators were age and gender.

PART IV – Exposure to tobacco promotion, the relation with smoking status and smoke-specific parenting

We used binary logistic regression analysis to investigate whether exposure to tobacco promotion through the different promotion channels is related to ever smoking and whether

smoke-specific parenting is related to this. The smoke-specific parenting variables are 1) having a non-smoking appointment with my parents, 2) frequency of smoke-specific communication- talked with parents about the negative consequences of smoking, 3) quality of smoke-specific communication - felt taken seriously when talking to my parents and 4) quality of tobacco-industry-specific communication - talked with my parents about the negative consequences of the tobacco industry. The tobacco promotion channels which are included are the same as for the other analyses in this paper, we only included models where exposure shows a significant relationship with having ever smoked. Furthermore we investigated whether there were interaction effects between promotion channels and smoke-specific parenting on ever smoking.

Non-smoking appointment. The binary logistic regression analysis for having a non-smoking appointment is significant for the models; tobacco retailers ($p < .001$), brands, company names or logos on the internet ($p = .001$) and seeing cigarettes in TV shows ($p = .002$).

Tobacco retailers. Exposure to tobacco promotion at tobacco retailers is significantly related to a higher chance to have never smoked ($OR = 1.01$, $p = .008$). An interaction effect has been found; no exposure to tobacco promotion at tobacco retailers and not having a non-smoking appointment increase the chance to have ever smoked ($OR = 0.45$, $p = .026$).

Exposure to tobacco brands, company names, logos on the internet. Exposure to tobacco brands, company names or logos on the internet is significantly related to a higher chance to have never smoked *(*$OR = 1.81$, $p = .006$). Furthermore this regression model shows that having a non-smoking appointment is related to a higher chance to have ever smoked ($OR = 0.70$, $p = .049$)

Cigarettes in TV shows. Seeing cigarettes in television shows is significantly related to a higher chance to have never smoked in this model ($OR = 1.52$, $p = .016$).

Table 3a.

Exposure to tobacco promotion and the association with having ever smoked and the relation with having a non-smoking appointment as moderator.

	r^2 (p)	OR	95%CI	p
Tobacco retailers	.057 (<.001)			
Tobacco retailer (never)		1.01	0.41,0.87	**.008****
None smoking appointment (no)		0.60	0.67,1.54	.931
Interaction		0.45	0.22,0.91	**.026**
Brands, company names or logos on the internet	.027, (.001)			
Brands, company names, logos on the internet		1.81	1.18,2.78	**.006****
None smoking appointment (no)		0.70	0.50,0.99	**.049***
Interaction		0.97	0.46,2.02	.936
Cigarettes TV Shows	.025, (.002)			
Cigarette TV shows		1.52	1.08,2.14	**.016***
None smoking appointment (no)		0.68	0.44,1.06	.091
Interaction		1.13	0.61,2.08	.690

*p<.05 ; ** p<.01; *** p<.001

Did speak with their parents about the negative influences of the tobacco industry. The binary logistic regression analysis for talking with parents about the negative influences of the tobacco industry is significant for the models; events and festivals (p = .001), supermarkets (p = .002), convenience stores (p = .002), petrol stations (p = .001), tobacco retailers (p < .001), tobacco brands, company names and logos on the internet (p < .001), cigarettes in movies (p = .001), cigarettes in TV shows (p < .001), cigarettes in video games (p = .002), seeing cigarettes on the internet (p = .009) and cigarette pack displays (p < .001).

Petrol stations. Reported exposure to tobacco promotion at petrol stations is significantly related to a higher chance of never having smoked (*OR* = 1.64, p = .01). In this model, in which exposure to tobacco promotion at petrol stations is included, youth who spoke with their parents about the negative consequences of the tobacco industry in the past 12 months have a higher chance of never having smoked (*OR* = 2.42, p < .001). Youth who reported exposure to tobacco promotion at petrol stations and who did speak with their parents about the negative consequences of the tobacco industry have a higher chance of ever having smoked (*OR* = 0.34, p = .003).

Tobacco retailers. Youth who reported exposure to tobacco promotion at tobacco retailers have a higher chance to have ever smoked (*OR* = 0.49, p < .001). Youth who did speak with their parents about the negative consequences of the tobacco industry have a higher chance of never having smoked (*OR* = 2.06, p = .002)

Tobacco brands, company names and logos on the internet. A significant relationship between a high exposure to tobacco brand names and logos and a higher chance of never having smoked has been found (*OR* = 1.89, p = .003). Youth who reported they spoke with

their parents about the negative consequences of the tobacco industry in the past 12 months also have a higher chance of never having smoked (*OR* = 1.80, *p* = .002).

Cigarettes in movies. High exposure to cigarettes in movies is significantly related to ever having smoked (*OR* = 0.65, *p* = .035).

Cigarette pack displays. Exposure to cigarette pack displays is related to a higher chance to ever having smoked (*OR* = 0.36, *p* > .001). Both high exposure to cigarette pack displays and talking with your parents about the negative consequences of the tobacco industry in an interaction effect is linked with a higher chance to never having smoked (*OR* = 2.10, *p* = .048).

Table 3b

Exposure to tobacco promotion and the association with having ever smoked and the relation with speaking about the negative influences of the tobacco industry as moderator.

	r^2 (*p*)	OR	95%CI	p
Festivals/ events				
Festivals/ events (never)	.032 (.001)	1.25	0.80,1.942	.320
Negative influences of the tobacco industry (no)		2.35	1.55,3.56	**<.001*** **
Interaction		0.42	0.20,0.88	**.023***
Supermarkets				
Supermarkets (never)	.026 (.002)	1.57	1.04,2.37	.029
Negative influences of the tobacco industry (no)		1.80	1.23,2.64	**.002****
Interaction		0.67	0.33,1.36	.273
Convenience stores				
Convenience stores (never)	.025 (.002)	0.89	0.61,1.30	.557
Negative influences of the tobacco industry (no)		1.97	1.33,2.90	**.001*** **
Interaction		0.60	0.30,1.22	.161
Petrol stations	.035 (<.001)			
Petrol stations (never)		1.64	1.12,2.39	**.010***
Negative influences of the tobacco industry (no)		2.42	1.59,3.68	**<.001*** **
Interaction		0.36	0.18,0.71	**.003****
Tobacco retailer	.066 (<.001)			
Tobacco retailer (never)		0.49	0.33,0.77	**<.001*** **
Negative influences of the tobacco industry (no)		2.06	1.30,3.26	**.002****
Interaction		0.72	0.35,1.45	.363
Brands, company names, logos at the internet	.034 (<.001)			
Brands, company names, logos on the internet		1.89	1.23,2.90	**.003****
Negative influences of the tobacco industry (no)		1.80	1.24,2.61	**.002****
Interaction		0.66	0.31,1.39	.279
Cigarettes Movies	.028 (.001)			
Cigarette Movies (never)		0.65	0.440,0.97	**.035***
Negative influences of the tobacco industry (no)		0.99	0.49,1.98	.980
Interaction		2.03	0.92,4.45	.076
Cigarettes TV Shows	.040 (<.001)			
Cigarette TV Shows		1.32	0.94,1.84	.102
Negative influences of the tobacco industry (no)		1.21	0.76,1.92	.414
Interaction		1.88	0.98,3.62	.055
Cigarettes Video Games	.026 (.002)			
Cigarette Video Games		0.75	0.48,1.16	.197
Negative influences of the tobacco industry (no)		1.89	1.28,2.78	**.001*** **
Interaction		0.77	0.37,1.59	.483

	r^2 (*p*)	OR	95%CI	p
Cigarettes Internet	.019 (.009)			
Cigarettes Internet		0.87	0.61,1.24	.456
Negative influences of the tobacco industry (no)		1.60	1.08,2.36	**.017***
Interaction		1.19	0.61,2.33	.599
Cigarette Pack Displays	.061 (<.001)			
Cigarette Pack Displays		0.36	0.24,0.55	**>.001*** **
Negative influences of the tobacco industry (no)		1.41	0.97,2.04	.065
Interaction		2.10	1.08,4.40	**.048***

*p<.05 ; ** p<.01; *** p<.001

Did talk with their parents about the negative influences of smoking. The binary logistic regression analysis for talking with parents about the negative influences of smoking is significant for the models; petrol stations (p = .006), tobacco retailers (p < .001), brands, company names and logos on the internet (p = .003), seeing cigarettes in TV shows (p = .005) and seeing cigarette pack displays (p = < .001)

Petrol stations. High exposure to tobacco promotion at petrol stations is significantly related to a higher chance to never having smoked (*OR* = 1.64, p = .007). A significant interaction effect has been found; youth who are exposed to tobacco promotion at petrol stations and who did talk with their parents about the negative influences of smoking have a higher chance to have ever smoked (*OR* = 0.37, p = .006)

Tobacco retailers. Exposure to tobacco promotion at tobacco retailers is significantly related to a higher chance to ever having smoked (*OR* = 0.60, p = .006) There is a significant relationship between a high exposure to tobacco promotion at tobacco retailers and did talk with your parents about the negative influences of smoking and having a higher chance of ever having smoked (*OR* = 0.38, p = .013).

Cigarettes in TV shows. High exposure to cigarettes in television shows is significantly related to a higher chance to have never smoked (*OR* = 1.49, p = .015)

Cigarette pack displays. Higher exposure to cigarette pack displays is related to a higher chance to ever have smoked *(OR* = 0.51, p = .001*)*

Table 3c

Exposure to tobacco promotion and the association with having ever smoked and the relation with speaking about the negative influences of smoking as moderator.

	r^2 (*p*)	OR	95%CI	*p*
Petrol stations	.022 (.006)			
Petrol stations (never)		1.64	1.14,2.35	**.007****
Negative influences of smoking (no)		1.04	0.69,1.57	.820
Interaction		0.37	0.18,0.75	**.006****
Tobacco retailers	.058 (<.001)			
Tobacco retailers (never)		0.60	0.42,0.86	**.006****
Negative influences of smoking (no)		1.08	0.69,1.70	.728
Interaction		.38	0.18,0.81	**.013***
Brands, company names, logos on the internet	.023 (.003)			
Brands, company names, logos on the internet		0.71	0.48,1.03	.076
Negative influences of smoking (no)		1.66	1.10,2.51	**.016***
Interaction		1.35	0.63,2.90	.436
Cigarettes TV Shows	.022 (.005)			
Cigarettes TV shows		1.49	1.080,2.07	**.015***
Negative influences of smoking (no)		0.69	0.424,1.13	.143
Interaction		1.33	0.691,2.59	.387
Cigarette Pack Displays	.040 (<.001)			
Cigarette Pack Displays		0.51	0.351,0.76	**.001*****
Negative influences of smoking (no)		0.97	0.660,1.43	.894
Interaction		0.68	0.331,1.42	.314

*p<.05 ; ** p<.01; *** p<.001

Felt taken seriously when talked with their parents about smoking. The binary logistic regression analysis for felt taken seriously when talking with their parents about smoking is significant for the models; festivals and events (p = .001), supermarkets (p = .001), convenience stores (p = .004), petrol stations (p = .004), tobacco retailers (p <.001), brands, company names and logos on the internet (p < .001), seeing cigarettes in TV shows (p < .001), cigarettes in video games (p = .001), cigarettes on the internet (p = .001) and seeing cigarette pack displays (p < .001).

Cigarettes in video games. Exposure to smoking in video games is significantly related to a more than 80% higher chance to have ever smoked (*OR* = 0.16, p = .006). Also, a significant interaction effect between a high exposure to people smoking cigarettes in video games and feeling like being taken seriously by your parents when you talk about smoking has been found; you have a five times higher chance to have never smoked at all (*OR* = 5.61, p = .047).

Cigarettes on the internet. Youth who are exposed to cigarettes on the internet have a higher chance to have ever smoked (*OR* = 0.32, p = .023). Also a significant interaction effect has been found for a higher exposure to cigarettes on the internet and felt taken serious by

their parents when talking about smoking, which gives a higher chance for not having smoked (*OR* = 3.46, *p* = .017).

Cigarette pack displays. High exposure to tobacco cigarette pack displays is significantly related to a higher chance to have ever smoked (*OR* = 0.35, *p* = .030). Felt taken serious by their parents when talking about smoking is related to a higher chance to have never smoked (*OR* = 1.70, *p* = .027).

Table 3d

Exposure to tobacco promotion and the association with having ever smoked and the relation with felt taking seriously when talk about smoking as moderator.

	r^2 (*p*)	OR	95%CI	*p*
Festivals/ events	.033 (.001)			
Festivals/ events (never)		0.35	0.10,1.17	.089
Felt taken seriously when talk about smoking (no)		1.68	1.00,2.82	**.048***
Interaction		3.55	1.02,12.36	**.047***
Supermarkets	.029 (.001)			
Supermarkets (never)		0.95	0.38,2.41	.928
Felt taken seriously when talk about smoking (no)		1.70	1.06,2.72	**.026***
Interaction		1.60	0.61,4.50	.311
Convenience Stores	.024 (.004)			
Convenience Stores (never)		0.84	0.33,2.16	.723
Felt taken seriously when talk about smoking (no)		2.04	1.26,3.31	**.004****
Interaction		0.86	0.31,2.34	.771
Petrol Stations	.024 (.004)			
Petrol Stations (never)		2.27	0.99,5.20	.051
Felt taken seriously when talk about smoking (no)		2.32	1.38,3.90	**.001*****
Interaction		0.50	0.20,1.23	.132
Tobacco Retailers	.059 (<.001)			
Tobacco Retailers(never)		0.46	0.20,1.07	.072
Felt taken seriously when talk about smoking (no)		1.89	1.09,3.27	**.023***
Interaction		1.03	0.41,2.55	.945
Brands, company names, logos on the internet	.041 (<.001)			
Brands, company names, logos on the internet		2.37	0.92,6.13	.073
Felt taken seriously when talk about smoking (no)		2.05	1.28,3.29	**.003****
Interaction		0.77	0.27,2.14	.617
Cigarettes TV Shows	.039 (<.001)			
Cigarettes TV Shows		1.02	0.47,2.22	.943
Felt taken seriously when talk about smoking (no)		1.38	0.76,2.48	.281
Interaction		1.75	0.76,4.02	.188
Cigarettes Video Games	.033 (.001)			
Cigarette Video Games		0.16	0.04,0.59	**.006****
Felt taken seriously when talk about smoking (no)		1.31	0.82,2.08	.246
Interaction effect		5.61	1.43,21.88	**.013***
Cigarettes Internet	.029 (.001)			
Cigarettes Internet		0.32	0.12,0.85	**.023***
Felt taken seriously when talk about smoking (no)		1.40	0.86,2.27	.166
Interaction		3.46	1.24,9.62	**.017***
Cigarette Pack Displays	.050 <.001)			
Cigarette Pack Displays		0.35	0.13,0.90	**.030***
Felt taken seriously when talk about smoking (no)		1.70	1.06,2.73	**.027***
Interaction		1.42	0.52,3.92	.489

*p<.05 ; ** p<.01; *** p<.001

Discussion

This research is an exploratory quantitative research to see to which degree Dutch youth reported to be exposed to tobacco promotion through various channels, such as places that can be visited (events, bars, supermarkets, tobacco retailers, etc.) media channels (internet, movies, TV shows, video games, etc.) and to which extent they are exposed to cigarette pack displays.

The study shows that a rather high percentage of the Dutch youth is still exposed to tobacco promotion in daily life, the highest rate was for seeing people smoking in movies (76.4%). To put these results in a broader perspective, we compared those with the Australian results of Perez et al. (2012) who conducted a similar study in 2012 (data collection in 2010). We see some similarities and some differences between these two countries, but in general the Dutch youth appears to be relatively more exposed to tobacco promotion through most channels – at events and festivals; pubs, clubs, nightclubs and bars; brands, company names or logos at the internet and seeing cigarettes on the internet – than the youth in New South Wales are. In the current study we added some questions about exposure to tobacco promotion through smartphone applications, regular mail, email, public areas and owning cigarette promotional items which are not included in the study of Perez et al. (2012). We can conclude that the Dutch youth did not report much tobacco promotion through these channels, however, despite the low exposure levels, these are still possible marketing channels to stimulate adolescents and young adults to start smoking.

The levels of exposure to tobacco promotion at the various promotion channels are important to know, because research shows that higher exposure to tobacco promotion is associated with a higher likeliness of starting to smoke (DiFranza et al., 2006) and susceptibility to smoking (Evans, Farkas, Gilpin, Berry, & Pierce, 1995). In this part we observed as well to which degree the Dutch youth is exposed to cigarette pack displays in stores. An important finding in the current study is the highly reported exposure to cigarette pack displays.

A second aim of this study is exploring which characteristics of the youth will increase the risk of exposure to tobacco promotion. We compared the available analysis of Perez et al. (2012) to the current study to put it in a perspective. When we look at important characteristics which are related to a higher exposure level of tobacco promotion, it depends on the kind of promotion channel which characteristic relates to a higher exposure level.

Furthermore we investigated whether exposure to tobacco promotion is associated with having ever smoked and how smoke-specific parenting plays a role in this.

Exposure to tobacco promotion at various channels

Places that can be visited. High rates of exposure are found at places that can be visited by the youth - pubs, clubs, nightclubs and bars or supermarkets or convenience stores or petrol stations or tobacco retailers. These promotion strategies at pubs, clubs, nightclubs and bars, convenience stores, petrol stations or tobacco retailers are an important element in building brand loyalty among adolescents (Katz & Lavack, 2002). Almost 35% reported exposure to tobacco promotion at pubs, clubs, nightclubs and bars, which is higher than found in New South Wales (Australia) (30.8%). A possible explanation is that in New South Wales the minimum age for buying a beer is 18 years old (NSW Government, 2013), while in the Netherlands this is 16 (Ministerie van Volksgezondheid Welzijn en Sport, 2013). So we expect that more youth in the Netherlands will visit pubs, clubs, nightclubs and bars than in New South Wales and so Dutch youth will be more exposed to tobacco promotion in these places. Still 24.0% of the Dutch youth reported exposure to tobacco promotion at events or festivals, which is also slightly higher than reported in Perez et al. (2012) (22.5%).

Exposure to tobacco promotion at supermarkets (23.9%), convenience stores (27.1%), petrol stations (30.3%) and tobacco retailers (33.4%) is common as well. These percentages are not reported for New South Wales participants, but when comparing it with exposure at events and festivals and in pubs, clubs, nightclubs and bars it shows comparable percentages. When we compare exposure to tobacco promotion at supermarkets, we see that never smokers are more exposed to tobacco promotion than ever smokers. A possible explanation can be that non-smoking youth may be more vigilant. As most of them are strongly opposed to smoking. they may also be more aware of persuasive attempts. Actually at tobacco retailers ever smokers are more exposed to tobacco promotion. A possible explanation is that ever smokers visit a tobacco retailer more often, because someone who does not smoke has no reason to go there.

Media channels. Higher exposure to smoking in films is associated with an increased likelihood of smoking among youth (Sargent et al., 2007), so it is important to know that the highest exposure the Dutch youth reported is for seeing people smoke cigarettes in movies (76.4%), which is comparable to the percentage found in New South Wales. A lower, but still high rate is found for seeing people smoke cigarettes in TV shows (49.6%). In New South Wales this percentage is higher (68.0%). A possible explanation for these relative differences

can be that both in the Netherlands and in New South Wales many movies are imported from all over the world and are the same for the Netherlands as for New South Wales, but TV shows are more nationally oriented.

In the current study we made a distinction between exposure to seeing cigarettes on the internet and exposure to tobacco brands, company names and logos on the internet. There is relatively high exposure to both of these channels, but seeing cigarettes on the internet is lower (32.1%) than exposure to tobacco brands, company names and logos on the internet (21.1%) An possible explanation is that youth sees more pictures with for example smoking friends than exact brand logo's or -names.

Another media channel where youth reported seeing people smoke cigarettes is in video games. Exposure to smoking portrayal in video games is less likely for female participants. This is not a surprising outcome, as research shows that males are more likely than females to play video games (Rooij, Schoenmakers, Meerkerk, & Mheen, 2008).

These percentages of various media channels may imply that the entertainment media is an important component for the industry to promote tobacco and tobacco products. In the past the tobacco industry paid film producers for the placement of their products in movies and provided free products for attributes (Harper & Martin, 2002). The question is now how much of the current exposure to cigarettes through media channels is caused by marketing of the tobacco industry and how much is included in the script without the influence of the tobacco industry.

Besides including the same possible channels for tobacco promotion that Perez et al. (2012) did, we also included additional media channels for tobacco promotion in smartphone applications, regular mail, email and owning cigarette promotional items. The results for these additional channels show that there is less exposure to tobacco promotion in smartphone applications (2.7%) regular mail (1.6%), email (1.4%) and owning cigarette promotional items (2.7%) than in the channels discussed above. The lower exposure to tobacco promotion in smartphone applications was not expected, because Bindihm et al.(2012) found 107 pro-smoking applications available at the international smartphone shops and in the Netherlands in 2011. 77% of the youth aged 12 to 15 years uses mobile internet and in the age group 15 to 25 years this is 89%. (Centraal bureau voor de statistiek, 2011a)

Cigarette pack displays. Despite restrictions and legislation, the literature shows that in the present-day cigarette packages are an important marketing tool in the special pack displays (Anderson, et al., 2002; Coombs, et al., 2011). Research of Anderson et al. (2002) shows that sometimes sales teams of the tobacco industry visit retailers to strengthen the

position of their fashionable, colourful package designs on the cigarette pack displays. But, since 2002, there are some restrictions, like the required warning labels on the packages (Ministerie van Volksgezondheid Welzijn en Sport, 2002) and cigarettes on points-of-sale have to be presented against a neutral background, with a normal price display (Rijksoverheid, 2012b). However, even exposure to these neutral cigarette pack displays is associated with a higher smoking susceptibility (MacKintosh, et al., 2012; Spanopoulos, Britton, McNeil, Ratschen, & Szatkowski, 2013). In the current study we see a high exposure level to cigarette pack displays, which is the highest at large supermarkets (> 5 cash registers) (64.5%). Lower levels of exposure to cigarette pack displays are reported for small supermarkets (34.2%), convenience stores (14.5%), petrol stations (29.9%) and tobacco retailers (5.4%).

When we compare exposure to cigarette pack displays in the Netherlands with New South Wales, we see a relatively higher exposure at the Dutch large supermarkets (64.5% vs. 35.1%) and at the Dutch small supermarkets (34.2% vs. 24.4%). A higher exposure is found in New South Wales at convenience stores (14.5% vs. 20.3%) and petrol stations (29.9% vs. 35.9%). These differences in exposure to cigarette pack displays can be explained by the differences in legislation in New South Wales and the Netherlands at the moment of field research. Six months before the field research of Perez et al. (2012), a cigarette pack display ban was introduced for large retailers (more than 50 employees). The new regulations stated that tobacco products must be stored out of sight so that they cannot be seen by the public from inside or outside the retail premises (Perez, et al., 2012). Later in that year (2010) it also became forbidden at the other smaller stores in New South Wales. In this explanation we assume that only large supermarkets have more than 50 employees. In the Netherlands it is still legal to show cigarette pack displays behind the cash register.

So at the moment of the current study in 2013 we expect even larger differences in exposure to cigarette pack displays at the different stores in the Netherlands and New South Wales. The differences in the current study show the importance of the prohibition of cigarette pack displays in the Netherlands as well.

Age groups 12 to 15 years and 16 to 24 years. Because it is legal in the Netherlands to buy cigarettes at age 16 instead of 18, which is the case in Australia (New South Wales Government, 2013; Rijksoverheid, 2012b), we decided to compare the current division of the age groups 12 to 17 and 18 to 24 years with another division of age groups 12 to 15 years and 16 to 24 years. We saw some differences in exposure rates between these age groups.

An unexpected result is that in the age group 12 to 17 years, youth reported to see more tobacco brands, company names and logos on the internet than youth aged 18 to 24 years old did, but when we split up the age groups in 12 to 15 and 16 to 24 years old, the age group of 16 to 24 years old report more tobacco promotion seen on the internet. This finding can denote a non-linear or U-shaped relation in the data, which can explain that there are higher differences in exposure rates between 16 and 17 years old youth.

Characteristics which are related to exposure to tobacco promotion

In the current study we investigated to which extent age, gender, education level, disposable income, smoking status, household smoking and smoking friends are related to exposure to tobacco promotion through the various channels among Dutch adolescents and young adults.

Age is related to exposure to tobacco promotion at events and festivals. At events and festivals we see that young adults (18 to 24 years) are less exposed to tobacco promotion than adolescents (12 to 17 years) are. When we look at the reported visit frequency we see indeed that adolescents visited more events and festivals in the past year than young adults did, so visitor frequency could be a possible explanation for this.

When looking at education level, we see in general that youth who reported to have finished or to follow a low education level have a higher chance to exposure to tobacco promotion than youth with middle or high education level. This association is there for exposure to tobacco promotion at events or festivals, at supermarkets and at petrol stations. Because data shows that lower educated people have a higher chance to smoke (Stivoro, 2011b), it is possible that their attention is more focused on the cigarettes and their promotion and advertisement.

When looking at smoking status, youth who reported that they have ever smoked have a more than 80% higher chance to see tobacco promotion at supermarkets than youth who have never smoked. And smoking status is also related to exposure to tobacco promotion on the internet, ever-smokers have a more than two times higher chance than non-smokers to see tobacco brands, company names or logos on the internet. A possible explanation for this is retargeting banners; it is possible that when someone visits a tobacco website - for example to order some cigarettes - that commercial banners are based on this visit. Furthermore, ever-smokers have an almost double chance to see people smoking cigarettes on the television.

Research shows that youth who are exposed to family members or peers who smoke are more likely to report exposure to tobacco promotion than youth who do not have smoking

family members or peers (Evans, et al., 1995; Madkour, Ledford, Andersen, & Johnson, 2013).

In the current study we do see associations between a higher number of household smokers and exposure to tobacco promotion. One of the results shows that youth with two or more smokers in their household have a higher exposure to tobacco promotion on the internet than youth with no smokers in their household. It is possible that through retargeting banners, youth who use the same computer as smokers in their household, who buy their tobacco on the internet or search for tobacco products, can have a higher exposure to tobacco promotion than youth who do not have smokers in their household. Furthermore, high exposure to cigarette pack displays is more likely for youth with one or more smokers in their household. It could be possible that youth is focusing more consciously on this when they are with a family members who buy cigarettes at the supermarket (for example when they join their parents for shopping) or maybe some of the participants buy cigarettes for a smoker in their household when they are older than 16 years.

Youth who have smoking friends report higher exposure through various tobacco promotion channels. Peers smoking is directly related to starting to smoke at young age (Alexander, Piazza, Mekos, & Valente, 2001; Tyas & Pederson, 1998). However, the negative influence of smoking peers (Alexander, et al., 2001; Tyas & Pederson, 1998) may lead indirectly to a higher chance of being exposed to tobacco promotion through various channels because the tobacco industry already exerts influence through these smoking peers.

Exposure to tobacco promotion, the relationship with smoking status and smoke-specific parenting

In general we see that reported exposure to tobacco promotion is related to a higher chance to have ever smoked – this is significant for exposure through the channels; tobacco retailers, cigarettes in movies, cigarettes in video games and to cigarette pack displays. This corresponds to investigation of Hunt et al. (2011), which shows that adolescents who are exposed highly to film smoking were more likely to have ever smoked than those with low exposure and to investigation of MacKintosh et al. (2012) which shows that notification of cigarette pack displays is associated with a higher sensitivity for smoking.

When looking at the relationship with smoke-specific parenting, we see that when youth reported exposure to cigarettes in video games or to cigarettes on the internet and felt taken seriously when talking about smoking with their parents, they have a higher chance to have never smoked. Both exposure to cigarette pack displays and talking with parents about

the negative consequences of the tobacco industry or felt taken seriously by their parents when talking about smoking is also related to a higher chance to have never smoked. So we expected that there is a relationship between the influence of smoke-specific parenting and their children's smoking behaviour when they are exposed to tobacco promotion. When youth reported exposure at tobacco retailers and that they did talk frequently with their parents about the negative influences of smoking, there was still a higher chance to have ever smoked. A possible explanation for this is that smokers will visit tobacco retailers more often.

But we see in the current study that reported exposure to tobacco promotion and having ever smoked are not consequently related. Some of the regression models show that exposure to tobacco promotion is related to a higher chance to have never smoked – this is significant for exposure to tobacco brands, company names and logos on the internet, exposure to cigarettes in TV shows and exposure to tobacco promotion at petrol stations. A possible explanation for these unexpected results can also be that never smokers may be more vigilant. They may be more aware of persuasive attempts, because of their strongly opposed attitudes against smoking.

When looking at smoke-specific parenting through these promotion channels, we see that youth who reported exposure to tobacco promotion at petrol stations and did talk about the negative consequences of the tobacco industry or talk frequently with their parents about smoking, have a higher chance to have ever smoked. A possible explanation for this unexpected result could be that parents talk more frequently about smoking when they suspect that their children do smoke sometimes.

Strengths and limitations

A strong point of the current study is the large sample size (N = 800) we used, which gives us a representative picture of the current exposure to tobacco promotion of the youth aged 12 to 24 years. To recruit this sample, we used a strong sampling method 'random digit sampling' for a representative sample and weighted for age, gender and region; we also selected landline numbers as well as mobile phone numbers randomly, so we could also reach younger people who do not always have a land line telephone line (Pickery, 2010).

Another strong point of the current study is that we could put our results in perspective, because we could compare most of the results to the study carried out in New South Wales (2012). Also, we asked for exposure to tobacco promotion through other channels which were not examined in the study of Perez et al. (2012), so our study is more extensive. We asked for tobacco promotion in smartphone applications, regular mail, email,

public areas and whether someone owned a cigarette promotion item. Results show that there is less exposure to tobacco promotion through these channels, but it is good to know that at the current moment the policy does not have to give priority to this.

An important restriction of the current study is that we used retrospective self-reporting data for investigating the extent of the exposure to tobacco promotion, which raises the possibility of response bias. It is possible that the respondents were not conscious of all the tobacco promotion they had seen, making the current results underestimated.

In the current study we looked whether there is a relationship between smoking status and exposure to tobacco promotion in the multivariate analyses, and whether there is an interaction effect between exposure to tobacco promotion and smoke-specific parenting on smoking status. Actually when using this classification this means that ever smokers also include experimenters and ex-smokers, which are entirely different target groups than current smokers or ex-smokers. For future research it would be interesting to see whether there are significant differences in exposure for current smokers, ex-smokers and non-smokers. It would also be interesting to take a look at the distinction between the reported exposure levels to tobacco promotion of susceptible non-smokers and non-susceptible non-smokers.

Another limitation of the current study design is the use of a cross-sectional survey. Because of the one-time measurement it is unable to establish causal relationships out of the current study. For future research it would be interesting to see whether there is a causal effect for high exposure to tobacco promotion and a higher chance to have ever smoked, using a longitudinal study.

In the current sample, more Dutch youth were still living at their parents than shown by the national figures of the Dutch Central Statistical Office (Centraal bureau voor de statistiek, 2012b). A possible explanation for this can be that more land line telephone numbers than mobile phone numbers were called, and youth who are not living with their parents, guardians or other family anymore generally do not have a land line telephone number (Pickery, 2010).

We did not take into account the visitor frequency for all the different channels when we measured the exposure to tobacco promotion through the various channels. So of the group respondents who reported ‘no exposure to tobacco promotion’, it is not known whether they had come into contact with these channels in the past month.

A limitation of the binary logistic regression analysis is that we used a dummy variable for exposure to tobacco promotion, for which we scaled ‘rarely exposed to tobacco promotion’ as ‘not exposed to tobacco promotion’. The risk is that the results of this

investigation are underestimated, because there will be some exposure to tobacco promotion in this group. This limitation of using dummy variables is the same for the variables of frequency of communication and quality of communication related to smoke-specific parenting, for which we scaled rarely spoken with their parents about the negative consequences of smoking and felt taken seriously when talking about the negative consequences of smoking scaled as 'no'.

In the current study we looked at the relationships between exposure, smoking behaviour and which influence parenting could have on this as a possible moderator. Literature shows that smoke-specific parenting also has a direct relationship with smoking behaviour (Andersen, et al., 2004), so it is possible that exposure to tobacco promotion is a moderator in this relationship. Further research has to point out how this relationship is built up. Furthermore, we have shown some interaction effects between exposure and smoke-specific parenting on smoking behaviour, and we looked at the relationship of high exposure to tobacco promotion and high smoke-specific parenting vs. the rest. Actually it is possible that there will be other interaction effects when you compare for example low exposure to tobacco promotion and high smoke-specific parenting vs. the other two possibilities.

Another restriction in the current method is that we compared the results of the current study with Perez et al. in a relative way; using percentages. It was also possible to examine whether there are significant differences between these two studies.

Future research

Based on the restrictions and recommendations above, some suggestions are given for further research.

Firstly, it is important for future research to further explain the reported exposure levels. What are adolescents exactly exposed to, what does this promotion exist of and under what circumstances does it occur. When this is further studied, it is possible to take action and to set up an anti-tobacco policy for this specific promotion.

Next to comparing the exposure levels of ever smokers and never smokers it is also interesting to see whether current smoking, ex- smoking, experimenter – smoking and non-smoking susceptibility is influencing the degree to which youth report that they are exposed to certain levels of tobacco promotion. Anti-tobacco policy or interventions can pay more attention to possible risk groups for exposure to tobacco promotion.

Conclusion

This research is primarily intended as exploratory research to see which tobacco promotion channels are used to influence adolescents, and which channels are used to a smaller extent. We see that Dutch youth are still relatively high exposed to tobacco promotion at places you can visit; events and festivals, pubs, clubs, nightclubs and bars, at the supermarket, at convenience stores, at petrol stations and at tobacco retailers, and through the following media channels; internet, movies, TV shows and video games, which suggests that the tobacco industry is still active in promoting their tobacco products. We see different relationships between gender, age, education level, disposable income, smoking status, household smoking, friends smoking at exposure to tobacco promotion through these specific channels. In general we see that reported exposure to tobacco promotion is related to a higher chance to have ever smoked. Smoke-specific parenting seems to play a role in this, possibly as a moderator.

Future research has to point out in more detail what happens in these promotion channels, what the role is of smoke-specific parenting in this and how the anti-tobacco policy may play a role in this to prevent smoking.

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Tabel A1a

Odds ratios with 95 percent confidence intervals for participants reporting seeing forms of Tobacco Promotion in the last month

	Events or festivals					Brands/ companynames/ logos on the internet					People smoking in video games					Cigarette pack displays exposure all stores				
		p<.001 r²=.111		Perez et al			p<.001 r²=.085		Perez et al			p<.001 r²=.200		Perez et al			p<.001 r²=.129		Perez et al.	
Predictor (reference category)	OR	CI	p	OR	p	OR	CI	p	OR	p	OR	CI	p	OR	p	OR	CI	p	OR	p
Age (12-17 years)	0.56	0.34, 0.94	**.030***	0.68	.055	0.63	0.38, 1.04	.075	0.46	**>.001*****	0.97	0.59, 1.62	.908	0.90	.626	1.15	0.72, 1.84	.533	0.61	.016
Sex (Male)	1.15	0.80, 1.67	.439	1.32	.078	0.79	0.53, 1.13	.198	1.23	.291	0.16	0.10, 0.26	**<0.001*****	0.28	**p>.001**	0.88	0.63, 1.23	.884	1.58	.003
Educatie (low)			**.001*****	..				.073					.247					.147		
Mid	0.90	0.59, 1.38	.654			0.99	0.65, 1.50	.966			0.97	0.62, 1.52	.906			1.32	0.89, 1.95	.157		
High	0.31	0.13, .56	**>.001*****			0.51	0.30, 0.86	**.013***			0.64	0.37, 1.09	.105			0.77	0.47, 1.24	.291		
Primary school	0.47	0.13, 1.69	.299			1.00	0.37, 2.70	.992			1.57	0.57, 4.27	.375			0.61	0.14, 2.57	.504		
Disposable income (none)			**.007****		.354			.237		.298			.333		.976			.166		.947
← €50	0.72	0.27, 1.87	.507	1.52	.825	2.23	0.71, 7.00	.169	1.90	.420	1.08	0.41, 2.85	.862	0.82	1.00	3.15	0.70, 14.21	.135	0.98	1.00
€50-€100	0.55	0.19, 1.57	.268	1.10	1.00	2.11	0.62, 7.19	.231	2.34	.188	0.61	0.21, 1.78	.370	0.80	1.00	4.21	0.90, 19.54	.066	1.64	1.00
€100+	0.81	0.28, 2.30	.699	1.05	1.00	2.94	0.86, 10.02	.084	1.72	.848	0.78	0.27, 2.25	.650	0.80	1.00	3.96	0.85, 18.34	.078	1.60	1.00
Unknown	3.11	0.90, 10.71	.072	0.94	1.00	1.04	0.20, 5.36	.955	1.26	1.00	0.51	0.13, 1.91	.322	0.75	1.00	6.78	1.28, 35.74	**.024***	1.06	1.00
Ever smoked (never smoked)	1.10	0.69, 1.73	.675	0.85	.435	2.50	1.57, 3.96	**<.001*****	0.64	**.027***	0.82	0.51, 1.32	.419	0.83	.345	0.99	0.65, 1.51	.975	1.27	.232
Household smoking (none)			.394		.457			**.041***		.701			.274		.646			**.012***		.303
1 person	1.09	0.68, 1.74	.714	1.26	.461	1.45	0.91, 2.29	.112	1.18	.818	1.47	0.91, 2.36	.108	0.84	.775	1.77	1.16, 2.71	**.008****	0.86	.474
2+ people	0.75	0.45, 1.25	.283	0.99	1.00	1.82	1.12, 2.94	**.015***	1.01	1.00	1.16	0.70, 1.92	.550	0.85	1.00	1.69	1.09, 2.61	**.018***	0.66	1.00
Friends smoking (none)			**.017***		.015			.346		.079			0.511		.055			**0.003****		.161

	Events or festivals					Brands/ companynames/ logos on the internet					People smoking in video games					Cigarette pack displays exposure all stores			
		p<.001 r²=.111		Perez et al			p<.001 r²=.085		Perez et al			p<.001 r²=.200		Perez et al			p<.001 r²=.129		Perez et al.	
1 friend	1.09	0.57, 2.08	.783	1.98	.006	1.11	0.60, 2.04	.726	1.70	.059	0.73	0.37, 1.42	.359	1.18	1.00	1.21	0.67, 2.18	0.523	1.29	.403
2 friends	2.45	1.33, 4.46	**.003****	1.04	1.00	1.65	0.92, 2.94	.089	1.50	.340	1.06	0.56, 2.00	.842	1.90	**.031***	1.54	0.87, 1.70	0.2730	1.26	.459
3+ friends	1.68	0.98, 2.89	.059	1.28	.953	1.41	0.83, 2.39	.196	1.52	.302	1.21	0.69, 2.10	.497	1.58	.187	2.39	1.46, 3.93	**.001*****	0.95	.101
Internet use (minutes a day)						1.02	0.97, 1.06	.411	1.06	**.011***	1.08	1.03, 1.13	**.001*****	1.08	**.030**					

Tabel A1a - continuation

Odds ratios with 95 percent confidence intervals for participants reporting seeing forms of Tobacco Promotion in the last month

	Supermarket			Convenience stores			Petrol stations			Tobacco retailers			People smoking in movies			People smoking on television			People smoking on the internet		
		p<.001 r²=.092			p=.020 r²=.052			p=.035 r²=.047			p<.001 r²=.111			p=.048 r²=.050			p=.002 r²=.062			p=.001 r²=.070	
Predictor (reference category)	OR	CI	P	OR	CI	p	OR	CI	p	OR	CI	p	OR	CI	p	OR	CI	P	OR	CI	p
Age (12-24 years)	1.00	0.62, 1.61	.985	1.50	0.95, 2.359	.078	0.66	0.43, 1.04	.074	1.12	0.71, 1.75	.618	0.92	0.56, 1.51	.747	0.87	0.57, 1.32	.534	1.13	0.74, 1.74	.553
Sex (Male)	0.81	0.57, 1.14	.236	0.85	0.61, 1.18	.346	0.85	0.62, 1.16	.317	0.91	0.66, 1.26	.598	0.88	0.62, 1.24	.480	0.72	0.54, 0.97	**.031***	0.72	0.53, 0.98	**.041***
Educatie (low)			**.001*****			.693			**.010****			.091			.062			.168			**.018***
Mid	0.59	0.39, 0.89	**.013***	1.02	0.69, 1.50	.901	0.93	0.64, 1.34	.698	1.05	0.72, 1.54	.782	1.64	1.06, 2.52	**.024***	1.23	0.86, 1.76	.244	1.67	1.16, 2.41	**.006****
High	0.43	0.26, 0.71	**.001*****	0.78	0.50, 1.22	.287	0.47	0.30, 0.74	**.001*****	0.63	0.40, 0.99	**.049***	1.60	0.99, 2.59	.052	0.79	0.52, 1.18	.251	1.00	0.65, 1.54	.975
Primary school	1.53	0.63, 3.71	.345	0.94	0.32, 2.73	.914	0.63	0.25, 1.58	.329	0.41	0.11, 1.46	.171	0.83	0.33, 2.05	.692	1.37	0.56, 3.33	.479	0.64	0.21, 1.90	.426
Disposable income (none)			**.046***			.561			.537			.995			.908			.539			.202
← €50	1.46	0.54, 3.95	.448	1.42	0.50, 4.04	.507	0.58	0.25, 1.32	.197	1.10	0.43, 2.76	.836	1.02	0.39, 2.64	.957	1.11	0.48, 2.56	.791	1.68	0.63, 4.49	.295
€50-€100	1.42	0.48, 4.16	.516	1.14	0.37, 3.43	.816	0.64	0.26, 1.57	.333	1.13	0.42, 3.04	.802	1.15	0.41, 3.26	.783	1.44	0.58, 3.56	.420	1.47	0.52, 4.16	.458
€100+	1.23	0.42, 3.63	.701	1.44	0.47, 4.33	.516	0.74	0.30, 1.82	.515	1.20	0.45, 3.22	.708	1.03	0.36, 2.94	.944	1.05	0.42, 2.59	.913	0.99	0.35, 2.83	.999
Unknown	4.16	0.90, 10.71	.072	2.09	0.59, 7.37	.251	0.97	0.31, 2.98	.963	1.13	0.34, 3.77	.839	0.73	0.21, 2.56	.630	0.84	0.27, 2.62	.744	1.66	0.49, 5.654	.415
Ever smoked (never smoked)	1.87	1.21, 2.89	**.005****	1.09	0.73, 1.63	.652	1.20	0.81, 1.79	.357	0.85	0.57, 1.27	.443	1.19	0.77, 1.84	.631	1.93	1.33, 2.79	**.001*****	1.17	0.79, 1.73	.418
Household smoking (none)			.650			.253			.495			.102			.593			.239			.744
1 person	0.84	0.53, 1.33	.460	0.91	0.59, 1.38	.611	0.92	0.61, 1.40	.720	1.48	0.98, 2.25	.061	1.21	0.76, 1.92	.413	1.25	0.85, 1.83	.240	1.12	0.75, 1.67	.563
2+ people	1.06	0.67, 1.67	.799	0.69	0.44, 1.07	.100	1.21	0.80, 1.84	.360	1.43	0.94, 2.18	.090	0.93	0.58, 1.48	.771	0.87	0.58, 1.28	.488	0.94	0.62, 1.44	.798
Friends smoking (none)			**.024***			**.025***			.330			**.006****			**.002****			.085			.176
1 friend	0.76	0.41, 1.41	.396	2.05	1.21, 3.46	**.007****	1.38	0.84, 2.29	.201	1.49	0.87, 2.55	.138	1.67	0.95, 2.96	.074	1.36	0.84, 2.21	.201	0.91	0.54, 1.53	.738

	Supermarket			Convenience stores			Petrol stations			Tobacco retailers			People smoking in movies			People smoking on television			People smoking on the internet		
		p<.001 r^2=.092			p=.020 r^2=.052			p=.035 r^2=.047			p<.001 r^2=.111			p=.048 r^2=.050			p=.002 r^2=.062			p=.001 r^2=.070	
2 friends	1.89	1.08, 3.29	**.024***	1.50	0.87, 2.61	.141	1.15	0.68, 1.94	.581	1.18	0.67, 2.07	.551	1.16	0.68, 1.99	.571	1.56	0.95, 2.53	.069	1.27	0.76, 2.11	.357
3+ friends	1.53	0.93, 2.52	.091	1.85	1.15, 2.97	**.011***	0.88	0.56, 1.40	.605	2.18	1.36, 3.49	**.001*****	2.54	1.53, 4.21	**<.001*****	1.71	1.11, 2.62	.013	1.52	0.96, 2.38	.068
Internet use (minutes a day)																			1.08	1.03, 1.13	**<.001*****
Television use (minutes a day													1.100	0.97, 1.23	.119	1.09	0.99, 1.19	.440			