The smoking chain: friendship networks, education, social background and adolescent smoking behavior in the Netherlands

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Adolescent Tobacco Use in the Netherlands: Social Background, Education and School Organization[1]

4.1 Introduction and Research Problem

This chapter takes on the question how school organization, social background, and school composition in terms of social background of pupils in the school, affects adolescent smoking behavior using the DNSSSU 2007 dataset. As discussed in the introduction, education plays a significant role in the transmission of health and socioeconomic inequalities. However, health and socioeconomic inequalities also seem to be related. The inverse relationship between unhealthy behavior, such as smoking, and socioeconomic status among general populations is well established in multiple countries (Cavelaars, et al., 2000; Kawachi, et al., 1999; Pampel, 2005). However, studies across different countries show an inconsistent picture regarding socioeconomic background and adolescents' smoking behavior. Some studies show no or slight differences (Botting & Bunting, 1997; Challier, Chau, Prédine, Choquet, & Legras, 2000; Donato, Monarca, & Chiesa, 1994; Glendinning, Shucksmith, & Hendry, 1994; Mullan & Currie, 2000; Tuinstra, Groothoff, Heuvel, & Post, 1998), while other studies show higher frequencies of smoking behavior among children with low socioeconomic status (De Vries, 1995; Lowry, Kann, Collins, & Kolbe, 1996; Van Lenthe, Boreham, & Twisk,

2001). American studies from the 1950's, with some exceptions, repeatedly observed an inverse relation between parents' education and teenage smoking, and consistently point out that smoking prevalence is higher among teenagers with lower educational aspirations or achievement (see Waldron and Lye 1990 for overview). Some of these studies hint on the idea that the effect of social background characteristics, such as parental educational level, might be mediated through school tracking. Waldron and Lye (1990) indeed show that the parents' education effect on smoking is mediated through school track. It might well be the case that the variations across countries have something to do with how a countries' educational system allows variation in school organization. School organization refers to whether and how different school types/tracks are, or are not, placed together in one school location. The question how school organization, social background, and school composition in terms of social background of pupils in the school affects adolescent smoking behavior is, to the best of knowledge, never been addressed in a country with a strongly differentiated educational structure such as the Netherlands.

This is unfortunate as the school is a central place where friendship networks are formed and smoking behavior is diffused. Furthermore, given that there is a strong social selection in different school types, social origin affects children's smoking behavior, partly because children are educated in particular school organizations characterized by their own social background. It is therefore relevant to know more about how school contexts affect adolescent tobacco use. The school context is particularly relevant as school organizations differ in the kinds of networks that are facilitated, and the kinds of norms that are thus conveyed. The facilitated networks within the school can vary significantly in terms of school composition, e.i.; the average distribution and spread of social background variables of students such as parental educational level and attitudes towards smoking behavior.

Certainly, in a strongly differentiated educational system such as in the Netherlands, with completely separate multiple-year school types often in separate school buildings from the age of 12 onwards, networks may be very homogeneous within schools and heterogeneous across schools in terms of social origin and norms related to tobacco use. Yet, because school organizations differ in the extent to which they offer multiple school types, it may be the case that such organizational features of schools affect children in different school types and of social backgrounds differently. The research question of this chapter is: *to what extent is adolescent smoking behavior affected by social background, type of education, school composition, and school organization?*

4.2 Theory and Hypotheses

Most studies that look at the role of social class in smoking behavior look at traits of the general population (Pampel, 2006; Pampel & Rogers, 2004). These explanations have some credence, yet they fail to account for changes over time and the role of contextual structures of the actual place and time of smoking initiation. The majority (approximately 90 percent) of Dutch begin smoking before the age of 18 (Gielkens-Sijstermans, et al., 2010). Thus, to find the cause of why adolescents start smoking and what the role of social background is, the most obvious place to look is the secondary school context. More specifically, looking at the school context is relevant for two reasons. First, within schools students build up their peer networks that are held to be significant for smoking behavior, through either selection or influence. Different school organizations facilitate different kinds of networks, and it is relevant to know whether the social composition of schools affect smoking behavior. Second, in the Dutch context, with a strongly differentiated educational structure with different school types and school organizations from the age of 12 onwards, the choice of school type is significantly affected by children's social background, which may mean that the social background effect runs partly through differential choice of school type and school organization (see Table 4.1).

Table 4.1   *Descriptive statistics of used variables and cross tabulation of parental educational level and school type (Dutch National School Survey on Substance Use 2007)*

	Min	Max	Mean	Std. Dev.
Daily Smoking	0	1	0.08	0.27
Gender(1=female. 0=male)	1	2	1.51	0.50
Age	11	19	14.06	1.50
School type				
Preparatory vocational education (VMBO)	0	1	0.45	0.50
Intermediate general education (HAVO)	0	1	0.27	0.44
University preparatory secondary education (VWO)	0	1	0.29	0.45
Parents' education (highest)				
Lower secondary or lower	0	1	0.19	0.39
Upper secondary general (HAVO/VWO)	0	1	0.09	0.29
Upper secondary vocational (MBO)	0	1	0.28	0.45
Tertiary	0	1	0.44	0.50
Parental attitude on smoking	0	4	0.60	0.06
Mixed school organization (relative to unitary school type)	0	1	0.53	0.50
Mean educational level parents	0.25	2.96	1.98	0.49
Standard deviation educational level parents	0.20	1.37	1.02	0.17
Mean attitude on smoking by parents	0.00	1.42	0.60	0.15
Standard deviation attitude on smoking by parents	0.00	1.24	0.60	0.12
	VMBO	HAVO	VWO	Total
Lower secondary or lower	534	143	69	746
Upper secondary general (HAVO/VWO)	152	105	109	366
Upper secondary vocational (MBO)	666	290	192	1148
Tertiary	455	533	778	1766
Total	1807	1071	1148	4026
Cramers V = 0.2809				
Spearman's rho = 0.3609	Prob > t	=0.0000		

4.2.1 Social Background and Adolescent
Smoking in the Netherlands

According to Netherlands Statistics data (cbs, 2007) people with higher levels of education are less likely to smoke (and in particular fewer cigarettes) than people with lower levels of education. The National "Peilstationsonderzoek" of 2003 by the Trimbos Institute shows significant differences in smoking behavior between Dutch secondary school students from age 12 till 18 from different school types (Monshouwer, et al., 2004). For example, the percentage of students who smoke on a daily basis is five times higher among students from the vocational school type (vmbo-p) than among students from the university-preparatory school type (vwo) (16.4 percent vs. 3 percent). This reflects an odds ratio of 6.3. This study looks at two different aspects of social background; parental educational level and parental attitudes towards their children's smoking behavior.[2]

Through socialization it is more likely that children pick up positive norms towards smoking, especially, if they see a significant other doing it. Given the negative association between socio-economic position and smoking, it is plausible that norms on smoking behavior are reproduced across generations along a continuum of socioeconomic attainment. This leads us to expect that parents' educational level has a negative effect on smoking (hypothesis 1).

However, parents play an important role in adolescent smoking behavior through other mechanisms as well (Engels, 1998; Wood, Read, Mitchell, & Brand, 2004). Engels (1998) sums up three possible avenues through which parents affect their children's smoking behavior. First, the *availability* of cigarettes in a household where the parents smoke might increase the chance that children pick up smoking. A second possible reason is that children pick up smoking by *imitating* their smoking parents. Third, some authors hypothesized that *family norms, values and lifestyles* affect children's smoking behavior (see Engels, 1998: 63-64 for discussion).

The latter argument supports a social capital perspective (Coleman, 1988) that states that parents play an important role in enforcing norms that refute deviant behavior such as smoking. Therefore, it is argued that parental norms towards smoking play a significant role in the initiation

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2 Unfortunately the National peilstations Survey does not include parents' occupation or income as additional measures of social background. Yet, given the pivotal role of education for smoking, and of parents' education for track placement of children, we contend that parents' education is highly relevant to study the relationship between social background, type of education and smoking.

of adolescent tobacco use. If parents condone smoking, it becomes more likely that their children start smoking. Hence, our *second hypothesis* is that students with parents who disapprove of smoking are less likely to smoke than students with parents who approve of smoking.

4.2.2 Adolescent Smoking and School Type

Independent of social class origin, it may be expected that school type/track affects smoking behavior. One mechanism in this regard concerns the differential myopia across school types with regard to costs and benefits of behavior. In the academic preparatory school type, it can be assumed that students have a longer time horizon with regard to the costs and benefits of their studies than in the preparatory vocational school type. In the preparatory vocational school type, students are likely to enter the labor market before the age of 20, which is when they will start to earn incomes. Students in the academic preparatory school type, however, will consider their educational career ended not before completing university around the age of 23, implying that a longer time-horizon is needed to reap the benefits of education. Extending this line of reasoning to health-related behaviors such as smoking, it is plausible that students enrolled in the preparatory vocational school type are more myopic than students in the academic preparatory school type, leading to less disapproval concerning smoking, as the short-term gains may outweigh the long-term 'costs' of bad health. Hence, our *third hypothesis* is that children enrolled in preparatory vocational school type smoke more often than children enrolled in higher-level school types.

However, an alternative theory that explains why school type affects smoking behavior is that school types differ in terms of the composition of student populations in important ways. School composition refers to the distribution of social background characteristics, such as parental attitude towards smoking and parental educational level, at the school level.

First, given that social origin affects school type and smoking, between-school type smoking differences may reflect differences in social background of student populations. Second, if social networks are essential for the diffusion of smoking, it is likely that the social composition of the school affects students' smoking behavior independent of individual characteristics. Given the social selection in school track, it is likely that the social composition varies in terms of parental education and parental norms regarding smoking, both at the individual and at the school level. The *fourth hypothesis* tested is that compositional differ-

ences are responsible for school type effects on smoking, that is, controlling for school composition in terms of social background and smoking attitudes will decrease the effect of school type on smoking behavior.

Moreover, because school networks are so essential for the diffusion of smoking behavior, it is unlikely that children's smoking behavior can adequately be explained by examining their individual (parental) characteristics, without paying attention to the composition of the school. If school networks are indeed important, it is likely that relevant characteristics of the parents of peers affect smoking behavior of children in addition to the characteristics of their own parents. Thus, for the two parental characteristics under study (parents' education and parental norms regarding smoking) it is expected that the composition of the school, in terms of parental characteristics, affects smoking behavior over and above the effects of individual characteristics (*hypothesis 5*).

4.2.3 School Organization and Effects on Smoking

The Dutch educational system is a very interesting case to investigate differences across school types in terms of smoking behavior. In the Dutch system, although strongly differentiated in different school types, there is variation among school organizations in the number of school types that are offered. Some organizations offer all three school types (preparatory vocational, intermediate general, academic preparatory), whereas other schools only offer the preparatory vocational school type, a combination of intermediate general and academic preparatory school types, or, in some cases, only the academic preparatory school type. Given this variability, the tracking arguments explained above can be more closely scrutinized. Assuming that mixed schools- schools that offer preparatory vocational as well intermediate general and academic preparatory school types at one location- offer more possibilities for contacts between pupils of different school types than schools that only offer either intermediate general and academic preparatory school types or the preparatory vocational school type, such contacts could lead to two different scenarios.

First, inter-school type contacts could lead to an intensification of between-school type differences resulting from differences in lifestyle preferences. This leads to magnified effects of school type in mixed schools relative to separate schools. Following Bourdieu (1984), some authors argue that smoking can be seen as part of a lifestyle, as an expression of taste that is used to delimit symbolic boundaries between social groups (Pampel, 2006). Pampel (2006) tested this cultural hypothesis by looking at the correlations between smoking and music prefer-

ences. He concluded that both socioeconomic status and cultural tastes correlate with smoking behavior.

Following this line of thought, it is argued that smoking as a means for distinction may particularly play a role if people of different social groups are confronted with each other. Assuming that lifestyles related to smoking are different across school types, it is thus hypothesized that smoking differences across school types become more pronounced if students of different school types are placed in the same school locations (*hypothesis 6a*).

An alternative theory concerning school organizations would, however, start from the idea that contacts between students of different social groups modify networks within schools in such a way that networks are more diverse with regard to social class, learning abilities, and lifestyles. If this is true, mixed schools may offer 'bridging' networks more than schools that only offer one school type, and more norms may be disseminated that originate from groups other than one's own. Such networks are similar to what Morgan and Sørensen (1999) have called 'horizon-expanding' networks. Through horizon expansion, it may then be expected that smoking differences between students of different school types are less pronounced in mixed schools relative to separate schools (*hypothesis 6b*).

4.3 Data Analytic Approach

Testing hypotheses one, two, and three is done by a straightforward estimation with individual level variables. The school level variables, in order to examine the school composition and organization effects, need more elaboration. In the sociological literature, it has been shown that the school context determines school outcomes through the school norms that are conveyed through networks surrounding schools. In contexts where there is much interaction among parents, between parents and school officials, and between parents and children, it is said that homogeneous "norm-enforcing social networks" are created that positively affect schooling outcomes and negatively affect deviant behavior (Coleman & Hoffer, 1987; Dijkstra, et al., 2004). For norm enforcement to develop it is essential that networks are homogeneous, and it can thus be expected that a lower school-level dispersion in social background variables leads to stronger norm-enforcement. Because the dataset does not provide network variables, a proxy variable for network effects is needed to examine the effect of school composition as stated in hypotheses four and five.

The effect of school composition is examined in two ways. First, the parameters of the *average* educational level of the parents and *average* parental attitude on smoking behavior is estimated in model four (see Table 4.2). Second, the parameter for the *dispersion* (standard deviation) of the educational level of the parents and parental attitude on smoking behavior is estimated in model five (see Table 4.2). The first step in testing hypothesis four is to model the effect of school type in model three. The second step is adding the parameters for the *average* score of the educational level of the parents and parental attitude on smoking behavior in model four and the parameters for the *dispersion* of the educational level of the parents and parental attitude on smoking behavior in model five, and see if this significantly changes the school type parameters.

To test hypotheses 6a and 6b on the school organization effects of 'horizon-expanding social networks" on smoking behavior a dichotomous variable 'mixed schools' is constructed that indicates whether different schools are geographically located at one location (building) or at separate locations (buildings). The next step is to look at the interactions with different school types at the school level. Again, the mixed school variable is a proxy for social network effects.

4.4 Methods

4.4.1 Data

The data come from the Dutch National School Survey on Substance Use 2007 (DNSSSU) (in Dutch: Peilstationsonderzoek 2007). This is a cross section study among 12-18 year old secondary school students. The sample consists of schools and classes nested in schools. First the schools were randomly sampled and secondly within these schools classes were randomly sampled. In total 7415 students have been interviewed. From 4119 students of this sample, the parents were also interviewed. From the dataset the students with information on the parents are used. Because of the differences in duration of the different school types only respondents from age 12 till 16 are included to prevent an overrepresentation of HAVO and VWO students. After deleting respondents with missing values, the number of cases is 3984, nested in 147 schools.

4.4.1.1 Dependent Variable

The dependent variable is *smoking*. The original smoking variable is an ordinal scaled variable that ranks in eight categories from 'I never

smoked' to 'more than 20 cigarettes a day'. Because of the large 0 category a linear (OLS) model is not adequate therefore the smoking variable was recoded in the dummy variable daily smoker versus non-daily smoker and used in a binary logistic multilevel model (see below).

4.4.1.2 Independent Variables
Gender is labeled 1 = girl, 0 = boy. The variable *age* ranges from 12 to 16 years. The variable *school type* has three categories: VMBO (preparatory vocational), HAVO (intermediate general education, preparing for tertiary vocational college) and VWO (academic preparatory school type, preparing for university). *Parental educational level* is used as an indicator for social background. This is an ordinal variable with four dummy categories. At the school level the average and standard deviation was generated. *Mixed school organization* is a dichotomous variable with the category on the school level: 0 = only a VMBO school or a school offering only HAVO and/or VWO, and 1 a VMBO with a HAVO and/or VWO school at on single geographical location. The *parental smoking attitude* variable that consisted of two questions: do you find it acceptable that your child experiments with smoking?" and "do you think is it alright if your child would smoke on a daily basis?" The two items have a correlation of 0.60. At the school level, the standard deviation of parental smoking attitude was calculated for every school. Table 4.1 gives an overview of the descriptive statistics of the used variables.

4.4.2 Multi-level Logistic Regression Modeling
Because the research question and hypotheses deal with school composition an OLS regression model would not be appropriate. With OLS regression the assumption is that all cases (for example students) are independent and randomly sampled. In our data students are nested in schools, therefore the OLS assumption of independent residuals becomes invalid. To disentangle the explained variability a two-level logistic multilevel model is used with two levels: the student and the school. More specifically, given the dichotomous nature of the dependent variable a binary logistic model with random intercepts is used.

4.5 Results

Table 4.2 shows the results of seven multi-level logistic regression models used to test our hypotheses (model 0-6). Model 1-6 show no significant gender effect on smoking. The effect of age is significant and stays

more or less the same across model 1-6; a higher age increases the risk to be a daily smoker.

Model two shows evidence that parents' educational level has a negative effect on smoking. Students with parents educated at the upper secondary or tertiary level are significantly less likely to be a daily smoker than students with parents educated at lower levels. This confirms the first hypothesis. The second hypothesis is also confirmed. The association between parental attitude and smoking is positive and stays more or less the same across model 2-6. Thus if parents approve of smoking this is positively related to smoking. In line with the literature, this clearly points out that parental education and attitudes play a significant role in adolescent smoking

Model one provides evidence that students enrolled in preparatory vocational school types more often smoke than students enrolled in higher school types. This confirms the third hypothesis. This makes it plausible that students in preparatory vocational school types are more myopic than students in higher school types. In model three, the effect of parents' education largely disappear. This indicates that parents' education has an indirect effect on smoking, running through school type. Even when controlling for compositional effects in terms of parent characteristics on the school level in model four and five, the school type effect holds up. This refutes our fourth hypothesis that compositional differences are responsible for school type effects of smoking. Rather, within school types parents' education hardly matters, whereas for students with similar social backgrounds school type remains influential.

With model 4 and 5 the hypothesis are tested how the composition of the school (measured by the two parental characteristics under study: parents' education and parental norms regarding smoking) affects smoking behavior over and above the effects of individual characteristics. The composition of the school is examined in two ways: by examining the *average* score on these variables at the school level, and by examining the *dispersion* within schools. Model four shows that the average score of parents' education has a positive effect on smoking. So, among students with the same individual social background, it is found that students are more inclined to smoke if they attend a school with a high average parental educational attainment. Model five shows that the dispersion of parents' education at the school level has a negative effect on smoking. Parental norms regarding smoking on the school level have no significant effect.

Hypotheses 6a and 6b test two different scenarios for how school organization affects smoking. Inter-school type contact can intensify

between-school type differences due to a taste for distinction. Therefore, hypothesis 6a argues that smoking differences across schools become more pronounced if students of different school types are placed in the same locations. Model six shows that this is only the case for intermediate general (HAVO) students. HAVO students, who smoke less than VMBO students do, smoke even lesser when they attend a school that also houses pre-vocational (VMBO) students. This can be interpreted by the argument that smoking is used to delimit symbolic boundaries between different social groups. If this is true, then hypothesis 6b, that argues that through horizon expansion smoking differences between students of different school types are less pronounced in mixed schools relative to separate schools, must be refuted.

Table 4.2 *Multi-level logistic regression analyses of daily Smoking on school type, parental education, parental smoking attitudes, and school level variables for the dispersion for parental educational level and parental attitudes towards smoking*

Model	0		I		2	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
Individual level variables						
Constant	**-2.623**	**0.000**	**-10.43**	**0.000**	**-9.691**	**0.000**
Gender(1=female. 0=male)			0.131	0.302	0.0996	0.440
Age			**0.564**	**0.000**	**0.466**	**0.000**
Parents' education (highest)						
Lower secondary or lower (Ref.)					(Ref.)	
Upper secondary general (HAVO/VWO)					-0.437	0.084
Upper secondary vocational (MBO)					**-0.427**	**0.017**
Tertiary					**-0.475**	**0.005**
School type						
Preparatory vocational education (VMBO) (Ref.)			(Ref.)			
Intermediate general education (HAVO)			**-0.704**	**0.000**		
University preparatory secondary education (VWO)			**-1.584**	**0.000**		
Parental attitude on smoking					**0.76**	**0.000**
School level variables						
Mean educational level parents						
Mean attitude on smoking by parents						
Standard deviation educational level parents						
Standard deviation attitude on smoking by parents						
Mixed school organization (relative to unitary school type)						
VMBO*Mixed School (Ref.)						
HAVO*Mixed School						
VWO*Mixed School						
Observations	3948		3948		3948	
Number of groups	147		147		147	
Log likelihood	-1056		-971.7		-961.5	
Variance component	**0.484**	**0.000**	**0.308**	**0.003**	**0.405**	**0.001**

P < 0.05 in bold. *p < 0.10 in italics*

Table 4.2 continued   *Multi-level logistic regression analyses of daily Smoking on school type, parental education, parental smoking attitudes, and school level variables for the dispersion for parental educational level and parental attitudes towards smoking*

Model	3		4	
	Coef.	**Sig.**	**Coef.**	**Sig.**
Individual level variables				
Constant	**-10.5**	**0.000**	**-11.08**	**0.000**
Gender(1=female. 0=male)	0.131	0.314	0.139	0.285
Age	**0.541**	**0.000**	**0.542**	**0.000**
Parents' education (highest)				
Lower secondary or lower (reference category)				
Upper secondary general (HAVO/VWO)	-0.189	0.459	-0.239	0.351
Upper secondary vocational (MBO)	**-0.351**	**0.050**	**-0.396**	**0.029**
Tertiary	-0.122	0.493	-0.208	0.258
School type				
Preparatory vocational education (VMBO) (reference category)				
Intermediate general education (HAVO)	**-0.654**	**0.001**	**-0.838**	**0.000**
University preparatory secondary education (VWO)	**-1.494**	**0.000**	**-1.714**	**0.000**
Parental attitude on smoking	**0.724**		**0.727**	**0.000**
School level variables				
Mean educational level parents			0.369	1.915
Mean attitude on smoking by parents			-0.00261	0.996
Standard deviation educational level parents				
Standard deviation attitude on smoking by parents				
Mixed school organization (relative to unitary school type)				
VMBO*Mixed School (Ref.)				
HAVO*Mixed School				
VWO*Mixed School				
Observations	3948		3948	
Number of groups	147		147	
Log likelihood	-937.4		-935.9	
Variance component	**0.309**	**0.003**	**0.294**	**0.005**

P < 0.05 in bold. *p < 0.10 in italics*

Table 4.2 continued *Multi-level logistic regression analyses of daily Smoking on school type, parental education, parental smoking attitudes, and school level variables for the dispersion for parental educational level and parental attitudes towards smoking*

Model	5		6	
	Coef.	**Sig.**	**Coef.**	**Sig.**
Individual level variables				
Constant	**-9.731**	**0.000**	**-10.54**	**0.000**
Gender(1=female. 0=male)	0.135	0.299	0.141	0.278
Age	**0.542**	**0.000**	**0.544**	**0.000**
Parents' education (highest)				
Lower secondary or lower (reference category)				
Upper secondary general (HAVO/VWO)	-0.211	0.408	-0.208	0.415
Upper secondary vocational (MBO)	**-0.369**	**0.040**	**-0.353**	**0.050**
Tertiary	-0.153	0.395	-0.14	0.434
School type				
Preparatory vocational education (VMBO) (reference category)				
Intermediate general education (HAVO)	-0.722	0.000	-0.11	0.717
University preparatory secondary education (VWO)	-1.612	0.000	**-1.104**	**0.000**
Parental attitude on smoking	**0.716**	**0.000**	**0.722**	**0.000**
School level variables				
Mean educational level parents				
Mean attitude on smoking by parents				
Standard deviation educational level parents	*-0.919*	*0.088*		
Standard deviation attitude on smoking by parents	0.386	0.563		
Mixed school organization (relative to unitary school type)			-0.0394	0.860
VMBO*Mixed School (reference category)				
HAVO*Mixed School			*-0.713*	*0.065*
VWO*Mixed School			-0.638	0.134
Observations	3948		3948	
Number of groups	147		147	
Log likelihood	-935.9		-933.6	
Variance component	**0.293**	**0.004**	**0.301**	**0.004**

P < 0.05 in bold. *p < 0.10 in italics*

4.6 Conclusion and Discussion

This Chapter provides a contribution to increasing knowledge of adolescent smoking behavior by investigating how the physical organization of the Dutch educational system -separate school types in separate locations or together in one location -interacts with social background.

In line with existing research, this chapter found evidence that individual characteristics such as socioeconomic background and parental attitudes towards smoking play a role. However, this chapter shows that school type mediates the effect of social background. Social background effects are almost fully explained by differential educational enrollments of students in different school types. Within school types, social background has hardly any effect on smoking. Tracking differences persist after controlling for social background, indicating that for students of similar backgrounds, tracking affects smoking in a predictable way; students in lower school types are more likely to smoke daily than students in higher school types.

This chapter also examined possible effects of school composition and organization that were expected based upon Morgan and Sørensen's (1999) thesis on horizon-expanding and norm-enforcing social networks. Based on this perspective it was argued that students in mixed-school type schools had a more horizon-expanding network, leading to the incorporation of norms of other groups than one's own. By contrast, in schools that only offer intermediate general and academic preparatory school types or the preparatory vocational school type networks were assumed to be more homogeneous and norm-enforcing. This led us to hypothesize that students in the preparatory vocational school type would smoke less whereas students in the intermediate general and academic preparatory school types would smoke more, if they were placed in a mixed school (compared to a single-school type school). No evidence was found for this hypothesis. On the contrary, it was found that students in the intermediate general school type, who smoke less than students in the preparatory vocational school type, smoke even lesser if they are placed in a school that also houses the preparatory vocational school type. This finding may be explained by the theory that smoking (or not smoking) is part of a lifestyle where a sense for distinction becomes more prevalent if students are placed in environments where contacts with other groups are promoted.

Some caution is justified concerning horizon-expanding and norm-enforcing networks, because the DNSSSU 2007 has no network data on friendship networks. The survey data used here for the measures for the

compositional effects are not optimal to measure network effects. Assumptions were made about the norm-enforcing or horizon-expanding structure of networks. The mean and standard deviation of parental educational level and attitudes on smoking and a dichotomous variable for school organization are used as proxy indicators for social capital. Yet, we do believe that this operationalisation, to a certain degree, approximates measuring social capital effects, because family background characteristics are proven to be good indicators for social capital in former studies (Coleman, 1988; Van de Werfhorst, 2005). Moreover, school composition effects have often been theorized from the perspective of social networks in educational studies.

Taking into account these limitations, this chapter shows, in concordance with other studies (Waldron & Lye, 1990), that not only school type matters in the variation of smoking prevalence, but also social background. Additionally, some small but significant effects of the mean and standard deviation of parental educational level, and the interaction of school organization with intermediate general education, are found.

To open up the black box of network structures for the explanation of substance use of youngsters, it is therefore essential to incorporate network analysis. If proper network data and techniques are used, it is plausible that network effects get a more serious place in the explanation of smoking behavior (Mercken, Snijders, Steglich, & de Vries, 2009; Mercken, et al., 2010a, 2010b; Mercken, Snijders, Steglich, & Vries, 2009; Veenstra & Dijkstra, 2011; Veenstra & Steglich, 2012). The balance in favor of individual characteristics in the survey data of this chapter may result from the fact that network data have not been used. To tackle this problem, the following chapters of this book will address the same question using longitudinal network data. Instead of using the mean and dispersion of social background characteristics as indicators for school composition effects, these chapters will look at the social background characteristics of friends within the secondary school network as indicators for school composition.