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

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The Influence of Norm-Enforcing and Horizon-Expanding Social Capital on Adolescent Smoking in the Dutch Educational System

7.1 Introduction and Research Problem

Various studies indicate the relevance of social capital for health and health-related behavior such as smoking (Kawachi & Berkman, 2000; Kawachi, et al., 1999; Putnam, 2000). However, despite a "torrent of empirical research" (Field, 2008, p. 64), little is known about the mechanisms explaining this relation (Macinko & Starfield, 2001). This is partly due to the manifold conceptualizations (Van de Werfhorst, 2005) or, as Mouw (2006) puts it, "the ambiguity of definitions". For instance, in the case of the relationship with smoking behavior, Kawachi et al. (1999) and Lindström (2003) focus on trust. In the previous chapter, Coleman's emphasis on norms, social networks and relations between children and adults is used (see Coleman, 1990, p. 334). Furthermore, most studies on social capital and health examine the general population (Putnam, 2000). This focus tells us little about the role of social capital for smoking onset, which occurs in The Netherlands most often (90 percent) during adolescence (Gielkens-Sijstermans, et al., 2010).

To determine the role of social capital for adolescent smoking, this chapter departs from the findings of the previous chapter and, in addition to insights from research by Coleman and Hoffer (1987), uses the work Morgan and Sørensen (1999) on educational achievement. Coleman and Hoffer show that dense networks around schools, which

supposedly reflect "norm enforcing social capital," positively affect school achievement. By contrast, Morgan and Sørensen (1999) show that this effect differs depending on the norms provided by social capital. For some students, a more norm-enforcing social network has a positive influence on their educational attainment, whereas for other students, a more horizon-expanding social network is beneficial. Horizon-expanding social networks refer to the idea that people within the network have weak ties to parts of society other than their own local cluster. These ties may exist, for example, as a consequence of participation in various forms of civic involvement, such as voluntary work, sports clubs, political organizations, or union membership. Following Morgan and Sørensen's approach, Van de Werfhorst (2005) shows that the distinction between norm-enforcing and horizon-expanding social capital is relevant for educational performance within the Dutch educational system. Students at the highest level benefit more from norm-enforcing social networks, and students at the lowest level benefit more from horizon-expanding social networks.

A similar mechanism may explain the difference in smoking habits between students of different school types in the Netherlands. For students in some school types, norm-enforcing social capital might negatively affect their smoking behavior, whereas in other schools, it could increase smoking behavior. This chapter connects Morgan and Sorensen's approach to insights from the field of youth studies on the role of friendship networks for smoking behavior. These studies show that friends tend to be similar in terms of salient characteristics such as smoking (Ennett & Bauman, 1993, 1994; Fisher & Bauman, 1988; Urberg, Degirmencioglu, & Pilgrim, 1997; Urberg, Shyu, & Liang, 1990). Since the late 1970s, there has been debate over whether this similarity is based on friendship selection or friends' influence (Cohen, 1977; Kandel, 1978). Mouw (2006) points out that the issue of selection vs. influence is also important when investigating the effect of social capital. Thus, this chapter addresses the following question: *To what degree do norm-enforcing social capital and horizon-expanding social capital affect adolescent smoking in different school types?*

7.2 Types of Social Capital and Smoking

7.2.1 Two Types of Social Capital

To explain the relationship between social capital and health, Putnam (2000: 327) suggests that social networks may enforce norms of healthy

behavior. The denser the network, the more likely it is that people will live up to norms that foster healthy behavior. This corresponds to Coleman and Hoffers' (1987) idea of social closure (density) in their study on school achievement in United States Catholic high schools. According to their argument, social closure refers to a social network of secondary school students and their parents, such that students and parents have multiple ongoing relationships with each other.

This network creates a structure for control and norm enforcement that enhances school achievement. Coleman and Hoffer called this structure intergenerational closure (1987, p. 226). Adding to this idea, Dijkstra et al. (2004) argue that a dense social network is only effective when dominant norms within the network form 'a more consistent social setting for child rearing and education' (p. 122). Such an environment is a 'functional community' for the individuals within it (Coleman & Hoffer, 1987; Dijkstra, et al., 2004). An important aspect of Coleman and Hoffer's idea of norm enforcement is that the connections within students' network are redundant, and the norms imposed by one member within his/her network are no different from the norms imposed by another network member (see Burt, Lin, & Cook, 2001, pp. 34-35).

Coleman's approach to social capital in terms of norm-enforcement has been criticized for being one-sided. It emphasizes a universal *positive* effect of dense networks in which norms are enforced upon individuals (Field, 2008; Portes, 1998, 2000). According to Morgan and Sørensen (1999), however, the outcome of norm-enforcing social capital on educational achievement is context dependent and not always positive. In contrast to Coleman, they argue that norm-enforcing social capital is only effective in the networks in which Catholic high schools are embedded. Public schools, on the contrary, are embedded in networks that foster norms that are less beneficial for school achievement. For students in such schools, parents' networks outside of the school environment are an important alternative for fostering norms that are beneficial for school achievement. Morgan and Sørensen refer to these networks outside of the school environment as horizon-expanding social capital.

The idea of horizon-expanding social capital is relevant for the Netherlands, which, as described in Chapter One, has a strongly differentiated educational system. Children from lower socioeconomic backgrounds are more likely to end up in the preparatory vocational school type. The motivation for the preference for this type of education by children with lower socioeconomic backgrounds lies in its labor market orientation (Van de Werfhorst, 2005). Following Coleman's argument on norm-enforcing social capital, norms valuing school performance are

less prevalent in parents' networks around these schools. Therefore, norm-enforcing social capital in these school settings is less beneficial for educational attainment. In contrast, students in the higher school types are more likely to come from higher socioeconomic backgrounds, where norms that value educational attainment are more prevalent. The network of parents around the school fosters a climate that is more beneficial for school performance. Therefore, norm-enforcing social capital in the higher-level school types will have a stronger positive effect on educational attainment in contrast to norm-enforcing social capital in the school setting of lower-level school types.

Horizon-expanding social capital is more beneficial for children's educational attainment in the lower school types. Broader networks of these students' parents outside of the school setting can provide exposure to alternative norms for school attainment. In contrast, Van de Werfhorst (2005) argues, horizon-expanding social capital would have a disturbing effect on higher-level students' school attainment.

7.2.2 Smoking and Social Capital around the School

This chapter argues that the mechanisms that explain the relation between social capital and school achievement are also applicable to smoking behavior among Dutch secondary school students. As Tables 6.1 and 6.2 in the previous chapter show, 78.7 percent of the parents of Dutch secondary school students say that it is not acceptable or totally not acceptable for their child to smoke occasionally, and 96.4 percent say that it is not acceptable or totally not acceptable for their child to smoke on a daily basis.

These numbers convincingly show that the dominant norm in the Netherlands is that smoking among adolescents is not accepted. However, as noted in Chapter One, students at the highest school level are more likely to come from higher socioeconomic backgrounds, where smoking behavior and norms that condone smoking are less prevalent. Based on this low prevalence, it is likely that these higher-level students are embedded in norm-enforcing social networks where norms that refute smoking are more prevalent. *Therefore, it is expected that the negative effect of norm-enforcing social capital on smoking behavior is stronger for students in the highest school type compared to students in the lower school type (hypothesis 7.1).*

Chapter Three showed that students at the lower school levels have the highest levels of smoking prevalence. As discussed in Chapter One, this might be because these students are more likely to come from lower socioeconomic backgrounds where smoking behavior is not only more

prevalent but is also accompanied by norms that approve of smoking. Thus, the norm-enforcing social capital within this school setting is more likely to foster norms that are positively oriented toward smoking. Following Morgan and Sørensen's argument, these students might benefit from horizon-expanding social capital when it comes to norms that disapprove of smoking. *Therefore, it is expected that horizon-expanding social capital has a more negative influence on the smoking behavior of students in the lower school types compared to students in the highest school type (hypothesis 7.2)*. Table 7.1 provides an overview of the expected effects of norm-enforcing and horizon-expanding social capital.

Table 7.1 *Expected effects of norm-enforcing and horizon-expanding social capital on the smoking of students in different school types*[1]

	School type	
	Vocational education	Academic preparatory education
Type of social capital		
Norm-enforcing	Weak effect	Strong effect
Horizon-expanding	Strong effect	Weak effect

7.2.3 Adolescent Smoking and Social Capital within the School

Coleman and Hoffer and Morgan and Sørensen see the school as the central social focus for understanding how social capital affects the behavior of individual students. They emphasize the relationships between parents, teachers and students that constitute the network of the school setting. Dutch scholars, such as Veenstra et al. (2005), consider various tie combinations between students, parents, and teachers. Thus, in the case of educational attainment, a significant part of a student's social capital is in her/his relations with fellow students within the school setting. It is unclear, however, whether friendship relations within the school mediate, alter or even counter the effects of norm-enforcing and horizon-expanding social capital via their parents. Mouw (2006) argues that as a result of social homophily, "(…) it is quite possible that much of the estimated effect of social capital simply reflects

1 This table is modeled after a similar table in a book chapter by Van de Werfhorst (2005).

selection effects based on the myriad of nonrandom ways in which people become friends" (Mouw, 2006, p. 80).

In the case of smoking, network studies show a clear association between individual adolescent smoking and that of peers (Cotterell, 2007; Ennett & Bauman, 1993, 1994; Fisher & Bauman, 1988; Urberg, et al., 1997; Urberg, et al., 1990). However, the mechanism behind this association is not always clear (Cotterell, 2007). Recent studies indicate that the effect of peer networks on smoking works in multiple ways (Mercken, Snijders, Steglich, & de Vries, 2009; Mercken, et al., 2010a, 2010b; Mercken, Snijders, Steglich, & Vries, 2009; Veenstra & Dijkstra, 2011). As described in detail in Chapter One, two important mechanisms are friendship selection and friends' influence. Furthermore, according to Harris (1998), the social influence of parents is virtually irrelevant to adolescent smoking. This argument opposes Coleman and Hoffer's and Morgan and Sørensen's arguments on the role of parental social capital. Harris argues that peer influence and genetics are the key factors for adolescents' smoking. Adolescents identify themselves with their peers more than with their parents. Therefore, the peer group is much more important for adolescents than are their parents' wishes, and imitating smoking behavior becomes an important means of acceptance by a particular peer group within a secondary school. Smoking works as a signifier for peer group alliance within the secondary school (Harris, 1998, p. 281) and a means of distancing adolescents from parental norms. The relationship between parental smoking and children's smoking, according to Harris, is primarily explainable by genetic factors. First, both children and their parents who smoke are more likely to have a genetic predisposition toward impulsiveness and sensation seeking, which makes them more likely to belong to a group that favors smoking. Second, genetics play a role in vulnerability to the development of habitual smoking. Thus, when investigating the influence of social capital on smoking behavior, it is important to consider whether friends select each other on similar smoking behavior or influence each other's smoking behavior.

7.3 Methods

The LNDA data described in section 2.2.2 are used to test the hypotheses.

7.3.1 Operationalization

Main variables

The dependent variable in the OLS and SIENA models is *smoking*, which consists of a quality-frequency interaction indicator, as described in detail in Chapter Five. Chapter Five also describes the indicator for *friendship* in more detail. The variable for the *percentage of smokers among friends* was computed for the random intercept models and indicates the percentage of friends who smoke on a daily basis with reciprocal ties. To measure *norm-enforcing social capital* at Wave Two, students were asked with how many parents of other students within the school their parents have contact. For the specification of the norm-enforcing social capital effect in the random intercept models, a variable was constructed to capture both the individual social capital score and the average social capital score of friends. First, an ego-centered network variable was computed. For instance, when an individual has four reciprocal friendships and all of those friends score two on the parent-parent contact variable, the average parent-parent contact of friends is $((4*2)/4) = 2$. After standardizing the ego-centered network variable and the individual variable with a z-score, the average score was computed, resulting in one composite variable for norm-enforcing social capital.

Following Putnam (2000), an important source of "bridging" or *horizon-expanding social capital* may be the civic involvement of the parents. Civic involvement refers to voluntary participation in an association (Curtis, Baer, & Grabb, 2001; Lancee & Van de Werfhorst, 2011; Ruiter & De Graaf, 2006; Schofer & Marion, 2001; Wilson, 2000). These associations may vary from sports clubs, political organizations, and unions to church organizations. The more civically involved people are, the more exposure they have to norms and ideas different from their own. Van de Werfhorst (2005) tested and confirmed the horizon-expanding social capital hypothesis for educational achievement at Dutch secondary schools using information on civic involvement. He found that students in the academic preparatory school type benefit most from norm-enforcing social capital, and students in the preparatory vocational school type benefit more from horizon-expanding social capital. Based on these findings, a similar operationalization of horizon-expanding social capital is used in this chapter. The students were asked whether their parents participated in political organizations, church

organizations, neighborhood organizations, sports clubs, or school organizations or have union membership. The scores of these six items were added to create one indicator, which is used to signify horizon-expanding social capital for each individual student. The larger the number of organizations in which parents participate (indicating their degree of integration to society at large) (see Putnam 2000), the more horizon expansion occurs. Again, for the OLS models, a variable was constructed to capture both the individual item and the ego-centered network item score. A note of caution must be made because, strictly speaking, networks outside of the school need not, by definition, lead to horizon expansion. Parents with children in the same school who have contact with one another may also meet each other outside of the school, at sports clubs, churches or political organizations, for example. This may be especially the case in smaller communities, where there is only one secondary school, one church, and one soccer club.

The *school type* variable consists of a dummy variable for preparatory vocational education level and a dummy variable for intermediate general education level. The academic preparatory educational level is the reference category. Section Two of Chapter Three discusses the rationale behind this operationalization.

Control Variables

The *gender* variable is added because, especially in the lower grades, secondary school friendship networks tend to be gender segregated (McPherson, et al., 2001).

Table 7.2 provides an overview of the descriptive statistics of the attribute variables used for the analyses in this chapter.

Table 7.2 *Descriptive statistics of the used variables*

	Obs.	Mean	Std. Dev.	Min.	Max.
Smoking behavior at Wave One	708	0.633	1.519	0	9
Smoking behavior at Wave Two	708	1.062	1.981	0	9
Age	708	13.466	0.611	11	16
Gender, male=1, female=2	708	1.507	0.500	1	2
Parent-parent contact	708	3.541	2.484	0	7
Civic involvement of parents	708	0.702	0.702	0	4
Preparatory vocational education	708	0.578	0.494	0	1
Intermediate general education	708	0.162	0.369	0	1
Academic preparatory education	708	0.260	0.439	0	1
Horizon-expanding social capital	708	15.178	351.774	-58.530	9343.557
Norm-enforcing social capital	708	-7.053	252.672	-2410.848	2986.382

7.3.2 Data Analytic Strategy

This chapter follows a similar data analytic strategy as Chapters Five and Six by testing the hypotheses first with random intercept models to account for the nested structure of the data (students nested within classes), and second with stochastic actor-based models and SIENA software. The reasons for using two estimation methods are given in Chapter Two. Chapter Two also provides a brief description of stochastic actor-based models. The following section discusses the specification of effects relevant for the question addressed in this chapter. Finally, as the results of Chapter Five show, the educational level of students has no effect on smoking behavior. A similar result was found for the models in this chapter. For this reason, parents' educational level is omitted from the final analyses.

7.3.3 SIENA Model Specifications

Behavior Influence Part of the Model

To examine the influence of friends' smoking behavior on the smoking behavior of the focal actor in the influence part of the model, the *average alter effect for smoking* is specified. When this effect has a positive coefficient, it signifies that students with friends who have a high average score on the smoking behavior indicator have a higher tendency toward smoking behavior. To examine the effects of social capital, *alters' covari-*

ate average effects are specified for the two forms of social capital. The *alters' covariate average effect* expresses the effect of the average attribute score (in this case, the various indicators for social capital and/or the interactions with school type) of friends on the behavioral variable (see Ripley, et al., 2011, p. 133). In addition to the social capital effects via the friendship network, the direct individual attribute effects are specified. Furthermore, the direct effects of school type, age, and gender are specified. Finally, there are two default control effects in SIENA: the *linear shape effect* (or the tendency to smoke effect) and the quadratic linear shape effect (or the quadratic tendency to smoke effect). These *basic shape effects* (Snijders, et al., 2010, p. 54) refer to basic network tendencies that influence smoking independent of a person's network position and can be considered constant. In this study, no expectations regarding the shape effects are formulated, but they are fitted in the models because it is required "(…) to obtain a good fit with the dynamics in the overall distribution of the behavior" (Knecht, 2007, p. 86).

Friendship Selection Part of the Model

To examine the effect of smoking behavior on friendship selection in the selection part of the model, the *similarity effect for smoking* is specified. This effect expresses the tendency to select friends on similar smoking habits. To control for possible confounders, six other effects are specified in the selection part. Because adolescents who smoke are found to be more sociable (Engels, et al., 2006) and have more peer relations (Maggs & Hurrelmann, 1998), smoking can affect the variation in friendship nomination and the chance of being nominated. To control for this, we specify both the *smoking behavior ego effect*, signifying the effect a student's own smoking has on friendship nomination, and the *smoking behavior alter effect*, signifying the effect a student's own smoking has on being nominated as a friend. Furthermore, the *gender similarity effect* is specified because boys are more likely to befriend boys, and girls are more likely to befriend girls (Lubbers, 2003).

Finally, three important structural network effects are specified. The first effect is *outdegree*, indicating the tendency to have ties at all. The second effect is *reciprocity*. This effect indicates whether actors have the tendency to reciprocate friendships (Gouldner, 1960; Wasserman & Faust, 1994). The third effect, *transitivity*, indicates the tendency to become a friend of a friend (Davis, 1970; Wasserman & Faust, 1994).

7.4 Results

7.4.1 Results of the Random Intercept Models

Table 7.3 shows the results of six random intercept models. The dependent variable is smoking at Wave Two. Models one, two, three, and four show that older students smoke more than do younger students. When smoking at Wave One and the daily smoking habits of friends are added in model five, the effect declines and becomes non-significant. Smoking at the first wave and smoking behavior of friends play mediating roles for the age effect. Model one shows that preparatory vocational and intermediate general students smoke more than academic preparatory students do. This is in line with the findings of Chapters Three, Four, Five, and Six.

Model two shows that horizon-expanding social capital is more important than norm-enforcing social capital. However, the effect of horizon-expanding social capital is positive. This implies that children with parents who are more connected to society via their civic involvement smoke more. This supports Harris' argument that smokers are more outgoing people. When the effect of friends' smoking is added in model four, the school type effects decline and become non-significant for preparatory vocational education.

Model three shows the different effects of norm-enforcing and horizon-expanding social capital between school types. None of the coefficients is significant. Therefore, model three provides no support for *hypothesis 7.1*, that the effect of norm-enforcing social capital is stronger for students at the highest educational level compared to students at the lower levels. Model three also provides no support for *hypothesis 7.2*, that horizon-expanding social capital has more influence on the smoking behavior of students in lower school types compared to students in the highest school type. Model four indicates that the smoking of friends has a positive influence on individuals. This confirms the importance of friends for smoking, but it remains unclear whether this is due to influence or selection. Therefore, the following section discusses the results of the SIENA models. Finally, model five shows that smoking at Wave One is an important indicator for smoking at Wave Two.

Table 7.3 *Random intercept models of smoking habits at Wave Two on norm-enforcing and horizon-expanding social capital, school type and daily smoking of friends*

Model	**0**		**1**		**2**	
	Coef.	**Sig.**	**Coef.**	**Sig.**	**Coef.**	**Sig.**
Constant	**1.126**	**0.000**	**-3.983**	**0.018**	**-4.146**	**0.013**
Age			**0.311**	**0.012**	**0.324**	**0.009**
Gender			0.224	0.128	0.209	0.152
School type						
Preparatory vocational education			**0.743**	**0.002**	**0.734**	**0.002**
Intermediate general education			**0.654**	**0.046**	**0.654**	**0.043**
Academic preparatory education (reference category)						
Norm-enforcing social capital					0.000	0.528
Horizon-expanding social capital					**0.001**	**0.012**
Norm-enforcing social capital*						
Preparatory vocational education						
Norm-enforcing social capital*						
Intermediate general education						
Horizon-expanding social capital*						
Preparatory vocational education						
Horizon-expanding social capital*						
Intermediate general education						
Percentage of friends who smoke						
at Wave Two						
Smoking behavior at wave One						
Between class variance	**0.414**	**0.012**	0.179	0.162	0.172	0.175
Within class between student variance	**3.585**	**0.000**	**3.595**	**0.000**	**3.564**	**0.000**
Log likelihood	-1479		-1470		-1467	
Total variance	3.999		3.774		3.736	
Variance partition component	0.103		0.048		0.046	
Observations	708		708		708	
Number of groups	44		44		44	

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

Table 7.3 continued *Random intercept models of smoking habits at Wave Two on norm-enforcing and horizon-expanding social capital, school type, and daily smoking of friends*

Model	**3**		**4**		**5**	
	Coef.	**Sig.**	**Coef.**	**Sig.**	**Coef.**	**Sig.**
Constant	**-4.200**	**0.012**	**-3.330**	**0.022**	-1.627	0.134
Age	**0.327**	**0.008**	**0.257**	**0.016**	0.128	0.111
Gender	0.207	0.156	0.156	0.223	0.099	0.302
School type						
Preparatory vocational education	**0.759**	**0.002**	*0.283*	*0.073*	0.083	0.480
Intermediate general education	**0.698**	**0.034**	**0.487**	**0.018**	*0.268*	*0.080*
Academic preparatory education (reference category)						
Norm-enforcing social capital	0.000	0.841	0.000	0.964	0.000	0.889
Horizon-expanding social capital	0.008	0.131	0.006	0.216	0.005	0.165
Norm-enforcing social capital*						
Preparatory vocational education	0.000	0.596	0.000	0.765	0.000	0.738
Norm-enforcing social capital*						
Intermediate general education	-0.001	0.798	0.000	0.969	-0.001	0.624
Horizon-expanding social capital*						
Preparatory vocational education	-0.008	0.158	-0.006	0.229	-0.005	0.205
Horizon-expanding social capital*						
Intermediate general education	-0.010	0.272	-0.004	0.580	-0.003	0.660
Percentage of friends who smoke						
at Wave Two			**0.053**	**0.000**	**0.024**	**0.000**
Smoking behavior at wave One					**0.828**	**0.000**
Between class variance	0.176	0.165	0.000	0.999	0.000	0.880
Within class between student variance	**3.549**	**0.000**	**2.826**	**0.000**	**1.574**	**0.000**
Log likelihood	-1466		-1372		-1165	
Total variance	3.725		2.826		1.574	
Variance partition component	0.047		0.000		0.000	
Observations	708		708		708	
Number of groups	44		44		44	

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

7.4.2 Results of the SIENA Estimations

Friendship Selection Part of the Model

In the selection part of all seven SIENA models (see Table 7.4), the outdegree parameter is negative and significant, implying that students do not prefer to nominate an arbitrary student as a friend. Students prefer reciprocated friendships to non-reciprocated friendships because the reciprocity effect is also positive and significant in all four models. The significant and positive transitivity effect indicates that students are also more likely to nominate a friend of a friend over an arbitrary student. Furthermore, the gender similarity effect in all four models shows that boys are more likely to choose other boys as their friends, and girls have a higher preference for choosing other girls instead of boys as friends. In all four models, the smoking behavior ego effect indicates that students who smoke are more likely to nominate other students as friends regardless of any other attributes. The smoking alter effect tells us that students who smoke are also more likely to be nominated as a friend by other students. Taken together, these findings suggest that students who smoke are more sociable and that smoking has social benefits for secondary school students. The positive and significant coefficient of the smoking similarity effect indicates that friends select each other based on similar smoking habits.

Behavior Influence Part of the Model

Table 7.4 shows the results of seven SIENA models. In the influence part, the tendency to smoke parameter is negative and significant in all models. This shows that smoking is unattractive to most students. This finding is in line with the descriptive statistics of Chapter Three, which show that the majority of students in the LNDA do not smoke (68 percent at Wave One and 57.3 percent at Wave Two). The parameter for the tendency to smoke squared is positive and significant in all four models, indicating that there is a positive feedback effect of smoking on itself. In other words, students who smoked at Wave One smoked even more at Wave Two. Models one to five show that, at the $p<0.10$ significance level, girls tend to smoke more than boys do. All seven models show, at the $p<0.10$ significance level, that older students smoke more. These findings on the effect of gender and age are in accordance with findings in the general Dutch population.

Model one shows that students in the preparatory vocational and intermediate general school type smoke more compared to their counterparts in the academic preparatory school type. This finding is consistent with the results from the random intercept models. Model two

shows that norm-enforcing social capital at the individual level has no effect. This is in line with findings on the effect of norm-enforcing social capital on educational achievement among Dutch secondary school students (Dijkstra & Veenstra, 2000; Van de Werfhorst, 2005). Horizon-expanding social capital at the individual level positively affects smoking behavior. In model five, the effects for norm-enforcing and horizon-expanding social capital via the friendship network are specified[2]. Only the horizon-expanding social capital via friends has a positive effect on smoking. Thus, students whose friends' parents are more connected to society smoke more. Model three shows the differences in the effects of norm-enforcing and horizon-expanding social capital between different schools types. At the $p<0.10$ significance level, norm-enforcing social capital has a positive effect on the smoking behavior of preparatory vocational and intermediate general students compared to the reference category of academic preparatory students. When controlling for network effects in model four, norm-enforcing social capital has a positive effect on smoking for intermediate general education students compared to the reference category of academic preparatory school students ($b=-0.098+0.146=0.048$) at the $p<0.10$ significance level. After controlling for the influence of the smoking behavior of friends, model seven shows no significant effect of norm-enforcing social capital via friends on smoking. Because the effect of norm-enforcing social capital at the individual level is stronger in the intermediate general school type compared to the academic preparatory school type, these findings provide support for Morgan and Sørensen's idea that the effect of social capital is context dependent. Thus, the effect of the density of a network on an outcome (in this case, smoking behavior) depends on the dominant norms within the network.

None of the models shows a difference in the effect of horizon-expanding social capital across different school types via either friends or the direct effect. Finally, models four and seven show that even after controlling for selection, friends' smoking has a positive influence on the smoking of individual students. This finding supports the idea that the influence of friends is important for students' smoking.

2 This approach differs from the specification in the random intercept model, where the effects for the individual variable and the ego-centered network variable (or friendship network effect) are combined into one variable. The reason for modeling separate effects is that they are specified by different functions in the objective function for behavioral change (see Ripley, Snijders and Preciado 2011, p. 133), which cannot be combined.

Table 7.4 *Results of SIENA analyses (five schools) for friendship relations, smoking behavior and for norm-enforcing and horizon-expanding social capital*

Model	**1**		**2**		**3**	
Selection part of the model	**Coef.**	**Sig.**	**Coef.**	**Sig.**	**Coef.**	**Sig.**
Basic rate parameter friendship	**17.987**	**0.000**	**17.975**	**0.000**	**17.999**	**0.000**
Outdegree (density)	**-2.514**	**0.000**	**-2.514**	**0.000**	**-2.514**	**0.000**
Reciprocity	**1.764**	**0.000**	**1.765**	**0.000**	**1.763**	**0.000**
Transitive triplets	**0.203**	**0.000**	**0.203**	**0.000**	**0.203**	**0.000**
Gender similarity	**0.422**	**0.000**	**0.421**	**0.000**	**0.422**	**0.000**
Smoking alter	**0.045**	**0.000**	**0.045**	**0.000**	**0.045**	**0.000**
Smoking ego	**0.068**	**0.000**	**0.068**	**0.000**	**0.068**	**0.000**
Smoking similarity	**0.674**	**0.000**	**0.671**	**0.000**	**0.674**	**0.000**
Influence part of the model						
Rate smoking period 1	**3.060**	**0.000**	**3.045**	**0.000**	**3.010**	**0.000**
Tendency to smoke	**-0.787**	**0.000**	**-0.795**	**0.000**	**-0.817**	**0.000**
Tendency to smoke squared	**0.178**	**0.000**	**0.179**	**0.000**	**0.182**	**0.000**
Gender	*0.157*	*0.091*	*0.157*	*0.101*	*0.162*	*0.090*
Age	*0.150*	*0.073*	*0.148*	*0.067*	*0.149*	*0.090*
School type						
Preparatory vocational education	*0.231*	*0.067*	*0.274*	*0.052*	0.008	0.974
Intermediate general education	**0.317**	**0.043**	**0.330**	**0.049**	-0.062	0.850
Academic preparatory education (reference category)						
Norm-enforcing social capital			-0.013	0.535	-0.100	0.024
Horizon-expanding social capital			**0.163**	**0.031**	*0.255*	*0.063*
Norm-enforcing social capital via friends						
Horizon-expanding social capital via friends						
Norm-enforcing social capital*Preparatory vocational education					*0.092*	*0.073*
Norm-enforcing social capital*Intermediate general education					**0.156**	**0.022**
Horizon-expanding social capital*Preparatory vocational education					-0.082	0.627
Horizon-expanding social capital*Intermediate general education					-0.231	0.320
Norm-enforcing social capital via friends*Preparatory vocational education						
Norm-enforcing social capital via friends*Intermediate general education						
Horizon-expanding social capital via friends*Preparatory vocational education						
Horizon-expanding social capital via friends*Intermediate general education						
Average smoking behavior friends (peer influence effect)						

P < 0.05 in bold, *P < 0.10 in italics*

Table 7.4 continued *Results of SIENA analyses (five schools) for friendship relations and smoking behavior and for norm-enforcing and horizon-expanding social capital*

Model	**4**		**5**	
Selection part of the model	**Coef.**	**Sig.**	**Coef.**	**Sig.**
Basic rate parameter friendship	**17.994**	**0.000**	**17.983**	**0.000**
Outdegree (density)	**-2.514**	**0.000**	**-2.514**	**0.000**
Reciprocity	**1.763**	**0.000**	**1.765**	**0.000**
Transitive triplets	**0.203**	**0.000**	**0.203**	**0.000**
Gender similarity	**0.422**	**0.000**	**0.421**	**0.000**
Smoking alter	**0.044**	**0.000**	**0.045**	**0.000**
Smoking ego	**0.068**	**0.000**	**0.068**	**0.000**
Smoking similarity	**0.675**	**0.000**	**0.672**	**0.000**
Influence part of the model				
Rate smoking period 1	**3.084**	**0.000**	**2.945**	**0.000**
Tendency to smoke	**-0.842**	**0.000**	**-0.818**	**0.000**
Tendency to smoke squared	**0.162**	**0.000**	**0.189**	**0.000**
Gender	*0.168*	*0.092*	*0.161*	*0.101*
Age	**0.135**	**0.102**	*0.175*	*0.057*
School type				
Preparatory vocational education	-0.117	0.648	**0.400**	**0.011**
Intermediate general education	-0.113	0.740	**0.339**	**0.039**
Academic preparatory education (reference category)				
Norm-enforcing social capital	**-0.098**	**0.049**		
Horizon-expanding social capital	*0.260*	*0.058*		
Norm-enforcing social capital via friends			-0.039	0.672
Horizon-expanding social capital via friends			**0.779**	**0.003**
Norm-enforcing social capital*Preparatory vocational education	0.094	0.106		
Norm-enforcing social capital*Intermediate general education	*0.146*	*0.053*		
Horizon-expanding social capital*Preparatory vocational education	-0.089	0.586		
Horizon-expanding social capital*Intermediate general education	-0.189	0.367		
Norm-enforcing social capital via friends*Preparatory vocational education				
Norm-enforcing social capital via friends*Intermediate general education				
Horizon-expanding social capital via friends*Preparatory vocational education				
Horizon-expanding social capital via friends*Intermediate general education				
Average smoking behavior friends (peer influence effect)	**0.212**	**0.023**		

P < 0.05 in bold, *P < 0.10 in italics*

Table 7.4 continued *Results of SIENA analyses (five schools) for friendship relations and smoking behavior and for norm-enforcing and horizon-expanding social capital*

Model	**6**		**7**	
Selection part of the model	**Coef.**	**Sig.**	**Coef.**	**Sig.**
Basic rate parameter friendship	**17.972**	**0.000**	**17.991**	**0.000**
Outdegree (density)	**-2.514**	**0.000**	**-2.514**	**0.000**
Reciprocity	**1.765**	**0.000**	**1.764**	**0.000**
Transitive triplets	**0.203**	**0.000**	**0.203**	**0.000**
Gender similarity	**0.422**	**0.000**	**0.422**	**0.000**
Smoking alter	**0.045**	**0.000**	**0.044**	**0.000**
Smoking ego	**0.068**	**0.000**	**0.067**	**0.000**
Smoking similarity	**0.673**	**0.000**	**0.670**	**0.000**
Influence part of the model				
Rate smoking period 1	**2.899**	**0.000**	**2.991**	**0.000**
Tendency to smoke	**-0.842**	**0.000**	**-0.878**	**0.000**
Tendency to smoke squared	**0.194**	**0.000**	**0.169**	**0.000**
Gender	0.147	0.198	0.146	0.244
Age	**0.172**	**0.049**	*0.159*	*0.066*
School type				
Preparatory vocational education	**0.829**	**0.019**	0.716	0.199
Intermediate general education	**0.635**	**0.024**	*0.606*	*0.071*
Academic preparatory education (reference category)				
Norm-enforcing social capital				
Horizon-expanding social capital				
Norm-enforcing social capital via friends	0.181	0.154	0.163	0.287
Horizon-expanding social capital via friends	0.286	0.447	0.468	0.278
Norm-enforcing social capital*Preparatory vocational education				
Norm-enforcing social capital*Intermediate general education				
Horizon-expanding social capital*Preparatory vocational education				
Horizon-expanding social capital*Intermediate general education				
Norm-enforcing social capital via friends*Preparatory vocational education	*-0.274*	*0.102*	-0.242	0.282
Norm-enforcing social capital via friends*Intermediate general education	*-0.339*	*0.094*	*-0.367*	*0.064*
Horizon-expanding social capital via friends*Preparatory vocational education	0.609	0.362	0.356	0.550
Horizon-expanding social capital via friends*Intermediate general education	0.883	0.272	0.854	0.309
Average smoking behavior friends (peer influence effect)			**0.283**	**0.034**

P < 0.05 in bold, *P < 0.10 in italics*

7.5 Conclusion and Discussion

Using Morgan and Sørensen's idea of norm-enforcing and horizon-expanding social capital and connecting this to insights on friends' influence and friendship selection, this chapter examined smoking among Dutch second-grade secondary school students. In contrast to Coleman and Hoffer, Morgan and Sørensen argue that the effect of social capital on educational attainment depends on what kinds of norms are facilitated by the social network of parents in the school setting. This chapter extended this idea to the case of adolescent smoking and argued that norms for smoking vary across the networks of parents surrounding the school. Students in the preparatory vocational school type are embedded in networks where positive norms toward smoking are more present than they are in the networks of students in the academic preparatory school type. This is one reason that preparatory vocational students smoke more than academic preparatory students do. Horizon-expanding social networks may play a role in contact with alternative norms related to smoking. The expectation was formulated that horizon-expanding social capital has a stronger adverse effect on the smoking of students in the vocational preparatory school type. Furthermore, this chapter showed that friendship networks within the school are a relevant part of students' social capital and must be accounted for. These networks have their own dynamics that may mediate, alter, or counter the effects of parents.

Contrary to expectations based on the various notions of social capital, it appears that having more friends with parents who are more embedded into society through horizon-expanding social capital via civic involvement has a positive effect on smoking. Furthermore, the findings demonstrate that the effect of exposure to norm-enforcing social capital varies between school types and depends on the channel through which this capital reaches an individual student. The effect of norm-enforcing social capital is most beneficial for academic preparatory students. It further appears that, in addition to the effect of norm-enforcing social capital, friendship networks within the school are essential for understanding adolescents' smoking. This finding of the importance of norm-enforcing social capital contrasts with Harris's idea that peer groups of friends are the single most important factor explaining adolescent smoking and that parents are irrelevant.