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

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8

Conclusion

8.1 Summary of the Central Findings

This study began with a question: Why do young people smoke? To provide a sociological answer, this study focused on the social contexts of friendship networks within the school, the role of parents (specifically, their socioeconomic status), smoking behavior and attitudes toward smoking, and the role of education to examine how these three contexts relate to each other. The effects of each of these three social contexts are well documented, but their relationship was unclear. This interrelatedness is important to investigate because recent studies show that these three social contexts depend on each other (Ennett, et al., 2010; Wen, et al., 2009). In other words, we cannot understand the full impact of one context without examining its relation with to the other two.

To understand the interplay of these three contexts, this study used insights from three different research fields: youth studies, sociology of education, and health stratification.

Taken together, the central research question of this study is as follows: How does the interplay between friendship networks, social background characteristics, and education affect the smoking behavior of Dutch adolescents? To answer the main research question, two data sets were used. First, data from the Dutch National School Survey on Substance Use (DNSSU) 2007 collected by the Trimbos Institute was used. The DNSSU 2007 dataset consists of a random sample from the Dutch elementary and secondary school student population and their parents. Second, this study used complete longitudinal network data (LNDA) among second-grade students in five secondary schools, which was collected especially for this study.

8.1.1 Smoking Behavior among Dutch Secondary School Students

The data of the DNSSSU 2003 and 2007 (Monshouwer, et al., 2004; Monshouwer, et al., 2008) and the LNDA show that there are differences in smoking prevalence between students across different school types. Students in the preparatory vocational and intermediate general school types smoke significantly more than do students in the academic preparatory school type. The data from both the DNSSSU 2007 and the LNDA show significant changes in smoking behavior over time. According to the DNSSSU 2007 data (Monshouwer, et al., 2008), smoking among Dutch youth decreased over the last decade, but differences remain between different school types. The steepest increase in lifetime smoking prevalence (10 percent) is between age 13 and 14 in the second grade. A similar trend is found the LNDA. Furthermore, in line with the literature, the LNDA consistently shows that smoking behavior is similar among friends.

8.1.2 Dutch Secondary School Friendship Networks and their Relationship with Smoking Behavior

With some reservation due to the method used, the findings of Chapter Three suggest that school structure characteristics, such as school type and school class, are related to friendship network structures. In line with Feld's (1981) notion of the relevance of foci for the creation of network ties, the majority of the schools in the LNDA data set show that friendships are more likely to exist between students within the same class and school types than between students in different classes and school types. Furthermore, four out of the five schools show significant associations between the community score in Wave One and Wave Two. This finding indicates that the secondary school friendship networks investigated in this study are partly stable and partly fluid over time.

Smoking behavior is similar among Dutch secondary school friends. Even when controlling for structural network effects and factors such as age, gender, school type, and social background characteristics, friends tend to select each other based on similar smoking behavior, supporting the homophily argument (McPherson, et al., 2001). However, friends also influence each other's smoking behavior, which supports the social influence argument (Bandura, 1977b). Put differently, even after controlling for friendship selection on the basis of similar smoking behavior, the results of this study show a peer influence effect.

8.1.3 The Role of Social Background Characteristics for Smoking Behavior among Dutch Secondary School Students

The DNSSU 2007 data show that parental educational level is related to adolescent smoking behavior. Children with highly educated parents are less likely to smoke compared to children with low educated parents. This finding supports the idea that social capital in the home situation is relevant to the development of adolescent behavior (Coleman & Hoffer, 1987). However, school type almost completely mediates this effect. Within different school types, the effect of parents' educational level plays virtually no role. Furthermore, parental attitudes toward smoking behavior have a consistent effect on children's smoking behavior. Children with parents who approve of smoking are more likely to smoke compared to children with parents who disapprove of smoking.

The LNDA shows a slightly different picture. No effect was found for parental educational level on smoking behavior. Nevertheless, in line with the findings based on the DNSSU 2007 data, negative parental attitudes toward smoking have a negative effect on children's smoking behavior.

8.1.4 The Relationship between Smoking Behavior among Dutch Secondary School Students, Type of Education, and School Organization

Although there are differences in smoking behavior between students across different school types, the findings of this study suggest that school type has no direct effect on smoking behavior. Using Morgan and Sørensen's (1999) thesis on norm-enforcing and horizon-expanding social capital, the effect of school type composition was examined. It was argued that students are exposed to horizon-expanding networks in mixed schools, resulting in the internalization of norms different from those learned at home. In contrast, single schools, with networks that consist only of students from the same school type networks, were assumed to be more uniform and thus norm enforcing. This study investigated whether students in the preparatory vocational school type would smoke less when placed in a mixed school compared to a single school and whether students in general/academic school types would smoke more when placed in a mixed school compared to a single school. No evidence was found for these hypotheses. Intermediate general school students smoked even less when placed in a mixed school that also housed the preparatory vocational school type. This may be explained by understanding smoking as a lifestyle trait, making smoking or not smoking a means of distinction that becomes more pronounced in the presence of students with other lifestyles.

8.1.5 The Relevance of Parental Networks in the School Setting, given School Friendship Networks

Both parents and friends' parents are relevant to the smoking behavior of Dutch secondary school students. Secondary school friendship networks mediate the effect of the attitudes of friends' parents on the focal actor's smoking behavior. In social network terminology, social contamination reaches at least distance two. Limitations of the data constrain the possibility of drawing conclusions about longer distances. These findings are in line with Coleman and Hoffer's (1987) claim about the relevance of functional communities for the development of adolescents. Furthermore, the effect of norm-enforcing social capital is stronger for students in the academic preparatory school type compared to students in the preparatory vocational and intermediate general school types. For students in the intermediate general school type, this effect runs partially via the friendship network.

8.2 Conclusion, Discussion and Directions for Future Research

What is the relevance of the findings of this study for the fields of youth studies, the sociology of education, and health stratification? An important issue within the field of youth studies concerning the effect of friendship networks on (smoking) behavior is the problem of friendship selection vs. friends' influence (Veenstra & Dijkstra, 2011; Veenstra & Steglich, 2012). Using SIENA models, this study shows that both mechanisms are at play. In other words, even after controlling for friendship selection based on smoking similarity, friends influence adolescent smoking behavior. This finding connects to recent findings from studies that used longitudinal network data and SIENA models (Mercken, Snijders, Steglich, & de Vries, 2009; Mercken, et al., 2010a, 2010b). However, these studies did not consider the institutional context of the secondary school organization, which influences the distribution of smoking behavior among students in different school types. The findings of this study show that school organizational characteristics are a focus around which social network ties are created. This phenomenon is highly significant for a country such as the Netherlands, which has a strongly differentiated educational system that is related to socioeconomic (health) inequality. The school organization affects a student's network, and the student's school network affects the student's chance of coming into contact with fellow students who smoke and potentially starting smoking.

Within the sociology of education, there is increasing interest in the role of school type differentiation for non-cognitive outcomes, such as civic involvement, deviant behavior, and wellbeing (Netjes et al. 2011a). However, the effect of differentiation on health is largely undiscovered territory. Therefore, this study adds to the discussion by examining smoking behavior. The findings indicate that differentiation in the Dutch educational system plays only a mediating role for the effect of social background characteristics on the smoking behavior of adolescents. The variation in smoking behavior across different school types is largely explained by socioeconomic background characteristics. In the case of friends' parents' attitudes toward smoking, the secondary school friendship network is an important channel for this effect, which is most beneficial for academic preparatory students.

The most important finding for the field of health stratification is the inverse relationship between health and socioeconomic status. However, Mackenbach (1994, p 76) states that the explanation for this relationship is unclear. One well-known piece of the puzzle is that parents are important (Avenevoli & Merikangas, 2003; Engels, 1998) for the transmission of smoking behavior. This transmission is more likely to occur between parents and children with low socioeconomic status. The results of this study confirm the relevance of parents. In addition, a novel finding of this study is that the parents of friends are also important, which is also relevant for the discussion on the degree of social contamination within the field of social network analysis (Christakis & Fowler, 2007, 2008, 2009; Lyons, 2011). This study shows that there is social influence over at least a distance of two ties.

The health policy relevance of this study is that smoking prevention programs should account for the fact that the secondary school peer context and the networks of parents surrounding the school do not exist independently of each other, as pointed out by Coleman and Hoffer (1987). Put differently, what happens in the school peer context partly depends on what happens at home. Prevention programs that take into account the interdependence of both contexts are preferable over prevention programs that target each context in isolation.

Despite these novel and potentially interesting findings, this study has some limitations. First, for the network analyses in this study, data were collected only in the second grade within secondary schools. Secondary school friendship networks do not cease to exist at the end of a school year or at the administrative boundary of the second grade. In addition, network and behavioral dynamics can vary over time depending on age. For instance, the increase in smoking prevalence lessens with

age. This raises the question of whether influence continues to play an important role in explaining smoking behavior similarity between friends in the higher grades. To obtain a more comprehensive understanding of the role of friendship networks within secondary schools and differentiation for non-cognitive outcomes, the collection of longitudinal network data over longer periods of time and across different grades is preferable. Furthermore, networks outside of the school are also important for understanding the behavior of adolescents (Kiesner, Poulin, & Nicotra, 2003), and future research should account for these networks. A second limitation is that the data were collected in suburban towns of medium size. In such communities, it is likely that norm-enforcing social capital is more prevalent. In more urbanized areas, a replication of this study may not show an effect of norm-enforcing social capital on smoking behavior. In addition, smoking is more prevalent in urban areas. A third limitation is that information on the home situation was collected via the children, leading to problems of reliability. For instance, 26.6 percent of the students did not know their parents' educational level. To address this problem in future research, network data on parents in the school setting should be collected by also interviewing the parents, which would also provide better indicators of their social capital. A fourth limitation is related to the combination of five network data sets into one data set for the SIENA analyses and problems of multicollinearity. One of the key variables in this study is school type. However, two of the three schools housed only one of the three types. This made it impossible to control for school location effects due to severe multicollinearity. As no hypothesis was formulated on school location differences, the combining of the five schools is based on the assumption that the patterns are equal across the different schools. However, future research should be directed at examining this assumption. Finally, it is not yet possible to measure effect size (Veenstra & Steglich, 2012) and to generate a model fit (such as an R-square) with SIENA models, making it impossible to compare SIENA outcomes with the outcomes of other statistical methods.

In summary, the scientific novelty of this study is that when controlling for network effects that might bias the friendship influence effect, an influence effect is found over social distance two for the smoking behavior of Dutch adolescents. These findings add to a growing body of literature (see Veenstra & Dijkstra, 2011 for overview), emphasizing the relevance of accounting for complex network dynamics when investigating adolescent behavior. This study convincingly shows that institutions such as the Dutch educational system, social phenomena such as ine-

quality, peer group dynamics, and socialization at home are key factors for understanding smoking behavior. In contrast to the popular belief that smoking is the act of a rebellious, individualist adolescent, it is a phenomenon that is largely governed by social mechanisms.