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# Can the school make a difference? A multilevel analysis of adolescent risk and health behaviour

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## Abstract

The main aim of this article is to assess the relationship between the structural and (health) policy variables of the school and characteristics of the individual on the risk and health behaviour of adolescents. Individual and school level effects on seven health-related behaviours are simultaneously estimated, using multilevel modelling. The data are from the Flemish health behaviour in school-aged children study in Belgium. Data are used from 29 Flemish schools in which students ( $N = 3225$ ), school administrators ( $N = 29$ ) and teachers ( $N = 1132$ ) were surveyed with anonymous written questions. The analysis confirms previous findings concerning individual level effects. Although differences between schools in risk and health behaviour were found to originate mainly from differences in pupil characteristics, substantial variation between schools remained with regard to regular smoking, drinking habits and tooth brushing after controlling for individual effects. A wide range of school structure and policy variables were taken into account, but only few of them were found to influence the health and risk behaviour of young people. Moreover, the study could not detect an effect of health promotion policy at school. The analysis therefore only partially confirms the hypothesis that the school has an impact on the health behaviour of young people. The findings demonstrate the need for a more thorough examination of the paths by which schools can influence the health behaviour of their pupils. © 2002 Elsevier Science Ltd. All rights reserved.

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## Introduction

Although mortality statistics may give the impression that adolescence is a healthy stage in life, it is becoming increasingly clear that the problems of health in adolescence are underestimated (Jessor, 1989; King, Wold, Tudor-Smith, & Harel, 1996; Arday, Giovino, Schulman, Mowery, & Samet, 1995). In addition, personality characteristics and diverse aspects of health and risk behaviour, important in later stages of life, are formed during the school years. Since in most countries schooling is compulsory, the school is in a unique position to enhance the health status of young people. From the middle of this century, school programmes

have been launched to enhance health-related behaviour by a variety of approaches.

The first programmes targeted the individual, focusing on giving information about potential health threats and about the risks of certain behaviours. These programmes did not have the desired effect (Green, 1979; Thompson, 1978). As research further investigated risk factors it became clear that health and risk behaviour in adolescence also had to be considered as social behaviour (Flay et al., 1988; Biglan, Severson, Bavry, & McConnell, 1983; Skinner, Massey, Krohn, & Lauer, 1985). In a second wave of programmes, the influence of peers, parents, the media and other environmental influences were therefore addressed. The aim of these more comprehensive approaches was to address not only the cognitive development but also to consider the entire personal, emotional and social development of adolescents. However, the effects of these approaches

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have been moderate (Evans et al., 1978; Botvin, 1982; Botvin & Tortu, 1988; Botvin & Wills, 1985; Flay, 1985; Tobler, 1986; Hansen, 1992; Reid, McNeill, & Glynn, 1995).

The first two waves of intervention programmes were based on the assumption that behaviour or lifestyle was an independent and self-determining function of individuals regardless of the environment which they inhabit (Rice, Carr-Hill, Dixon, & Sutton, 1998). Only more recently has the influence of the environment been fully recognised (Kickbush, 1989). In Europe, this has led to the development of the “Healthy School Concept” (Young & Williams, 1989); later reformulated as the Health Promoting School Concept (McDonald & Ziglio, 1994). This concept not only deals with health as part of the school curriculum (at the class level), but also considers the physical and social environment (at the school level) and the influences of the wider community, with an accent on the influence of parents (at the community level).

Health education at school has thus moved from the traditional information-based and fear-arousing health education programmes, through more comprehensive social skills based programmes, to an ecological approach of health promotion. However, little information is available about which components of the school environment influence the health behaviour of pupils. In assessing these influences, a complicating factor is that schools differ not only by structural and policy characteristics but also by their composition, as a reflection of differences in intake.

The main aim of the present study is to examine which elements of the school environment influence the risk and health behaviour of adolescents. We use an integrated approach, taking both individual and school characteristics into account and controlling for differences between schools with respect to school environment characteristics and for differences of intake. More specifically, we examine whether and to what degree school characteristics have an influence additional to individual characteristics on seven health-related behaviours. Explanatory variables are derived from three research paradigms: individual based theories on developing health behaviour, structural oriented school effectiveness and school organisational studies, and school health promotion policy studies.

#### *Individual based studies of health and risk behaviour of young people*

A common framework for understanding health-related behaviours has been proposed by the health behaviour of school-aged children study (HBSC-study), the socialisation perspective. The HBSC-study centres on a survey that is conducted every 4 years in a growing number of countries, following the same protocol and

using the same international standard questionnaire. It is a collaborative project of the WHO European regional office (details on the HBSC methodology can be found in the research protocol for the 1993–94 study, see Wold, Aaro, & Smith, 1994). The socialisation perspective recognises that a person is more than a product of environmental influences and situational forces. The individual is seen as an active subject who is able to influence the environment. The HBSC-study includes questions on a range of risk and health behaviours along with other aspects of the young person’s life such as socio-demographic characteristics, psychosocial adjustment, mental health and perceptions of socio-economic circumstances. The study also includes aspects related to the family, the school and the peer group, smoking behaviour of the parents, school results, attitude towards the school, playing truant, integration in the peer group and the family, repeating classes and relationship with teachers. Other studies have shown that such factors are associated with the onset of tobacco use (Reid et al., 1995) and in particular school factors have been associated with a range of risk behaviour (Nutbeam, Smith, Moore, & Bauman, 1993; Nutbeam & Aaro, 1990; Smith, Roberts, Nutbeam, & Macdonald, 1992; Wold et al., 1994). In this study the concept of the HBSC-study was used for selecting individual level factors.

#### *Structural oriented school effectiveness and school organisational studies*

Conrad, Flay, and Hill (1992), for instance, identified eight studies, which found that smoking onset related to variables of the school climate, such as academic values and achievements, problem behaviour, attitudes about discipline and involvement in extra-curricular activities.

After the publication of the Coleman Report (1966) in the USA and the Plowden Report (1967) in Great Britain, which both concluded that the influences from the home were of greater importance than the influence of the school, other research groups started research that challenged these conclusions. In these studies the main criterion measure for effectiveness was academic achievement. Only in a following wave of studies has some attention been given to the effect of the school on the well-being of the child or adolescent and the social behaviour in and out of the school (e.g. Rutter, Maughan, Mortimore, & Ouston, 1979; Mortimore, Sammons, Stoll, Mewis, & Ecob, 1988).

In a range of studies, effects have been found of school structural variables, characteristics of school principals/teachers and aspects of the school policy on pupils achievements and pupils wellbeing (Verhoeven et al., 1992). Variables related to those concepts were included in this study.

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