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# Theories of how the school environment impacts on student health: Systematic review and synthesis

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## ABSTRACT

Public-health interventions informed by theory can be more effective but complex interventions often use insufficiently complex theories. We systematically reviewed theories of how school environments influence health. We included 37 reports drawing on 24 theories. Narrative synthesis summarised and categorised theories. We then produced an integrated theory of school environment influences on student health. This integrated theory could inform complex interventions such as health promoting schools programmes. Using systematic reviews to develop theories of change might be useful for other types of ‘complex’ public-health interventions addressing risks at the individual and community levels.

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## 1. Introduction

Public-health interventions based on theory can be more effective (National Institute for Health and Clinical Excellence, 2007). Complex public-health interventions aim to address multiple determinants of risk at the individual and community level (Craig et al., 2008) and have been conceptualised as interruptions in ecological systems (Hawe et al., 2004). Such interventions often lack theories of change or use theories that are insufficiently ‘complex’ (Bonell et al., 2012). We examine the value in using a systematic review of theory for elaborating such theories of change, focusing on the case of theories underlying how the school environment, and interventions to modify this, might influence young people’s health.

Adverse health behaviours, outcomes and inequalities are often determined in childhood and adolescence, and sustained throughout the life-course (Marmot, 2010). Health education delivered through the school curriculum, aiming to improve knowledge and skills, and modify norms, is established in schools but often has disappointing results (DiCenso et al., 2002; Faggiano et al., 2005;

Foxcroft et al., 2002; Harden et al., 2001; Oliver et al., 2008; Thomas and Perera, 2006; Wells et al., 2003). A complementary approach is to ensure that the broader school environment supports health, embodied for example in Health Promoting Schools and coordinated school health programs (Lister-Sharp et al., 1999). ‘School effects’ research originally explored how the school environment shapes student attainment and behaviour, with influential factors including how well schools engage pupils and foster positive student–teacher relationships (Mortimore et al., 1988; Rutter et al., 1979). Subsequent research examined how such factors influence health (Markham et al., 2012; West et al., 2004). Interventions to modify the school environment have reported benefits, for example, regarding aggression, substance use and sexual risk behaviour (Bond et al., 2004; Flay et al., 2004).

While traditional systematic reviews examine empirical evidence on the health effects of schools and school-environment interventions (Aveyard et al., 2004a; Fletcher et al., 2008; Lister-Sharp et al., 1999; Sellström and Bremberg, 2006), they have not reviewed what theories of change might underlie such effects. This is an important gap because it appears that many of the complex interventions included in these reviews are informed by insufficiently ‘complex’ theories; being focused only on individual-level rather than ecological-level processes (Bond et al., 2004; Cuijpers et al., 2002; Perry et al., 2003). We therefore aimed to review and

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synthesise theories which have been used to explain or hypothesise how the school environment influences health. The objective of this synthesis was to construct an integrated theory delineating the complex causal pathways via which school effects on health may occur, which might inform future interventions and research.

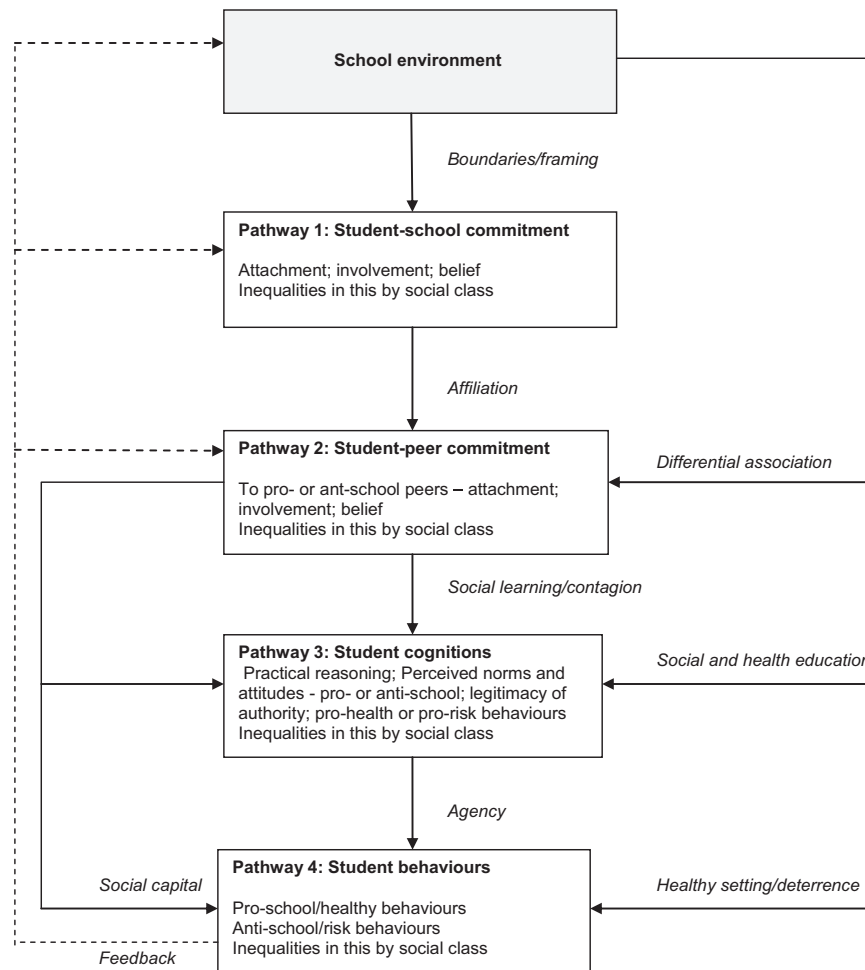
## 2. Methods

This review of theory was part of a larger, multi-stage project which also synthesised empirical evidence on how the school environment influences health (Bonell et al., 2013). In stage 1, we searched for and constructed a descriptive map of all relevant theoretical and empirical references relating to the school environment and health. Inclusion criteria for stage 1 were that studies reported: (1) quantitative or qualitative research, reviews or theories; (2) conceptualised or empirically examined the influence of the school social and/or physical environment, or interventions to address this (not including the provision of health education or health-related goods or services); and (3) concerned the health or well-being outcomes of students (age 4–18 years) or staff.

We searched 16 bibliographic databases between July and September 2010, with no limits on language or date. Our main searches involved terms for school; children/young people; and various health outcomes. Additional searches employed terms

relating to 'health promoting schools'. These retrieved 82,775 references, which were uploaded into EPPI-Reviewer 4 software (Thomas et al., 2010). De-duplication left 62,329 references. Of these, 1144 references met our stage 1 inclusion criteria and were included in our map. This map, together with further details of inclusion criteria and methods, is described in our full report (Bonell et al., 2013). We used this 'map' of the literature to inform consultation with academic, policy and youth stakeholders to determine priorities for stage two.

Stage 2 involved five separate syntheses, one on theory and four on empirical research focused on the following health topics among students aged 4–18: aggressive behaviours, smoking, drinking and illicit drug use, sexual health, physical activity and diet, mental health, sun protection and accidental injury. Stage 2 inclusion criteria for our review of theory were that reports: (1) presented or cited a named abstract, generalisable framework, developed by the authors or others, for how schools might influence student health; and (2) were written in English. Two reviewers first re-checked references that were described as concerning theory in the stage-one evidence map, to determine if they met these criteria. Second, reviewers screened all empirical reports included in our four syntheses of empirical evidence in stage two ( $n=79$ ) to see if these cited theories that met the criteria above. Where the included report was not the original source of the theory, this was obtained. The original source was used to extract the theory's name, constructs and pathways.



**Fig. 1.** Integrated theory of school environment influences on student. This figure illustrates an integrated theoretical model of the ways in which the 'school environment', at the top of the figure, influences at multiple inter-acting levels: (1) student–school commitment; (2) students–peer commitment; (3) student cognitions; and (4) students' behaviours. Key theoretical concepts addressing upstream, medial and proximal pathways are identified in *italics*. The 'feedback' loops in the diagram illustrate how both the school environment influences health, but also the enactment of health behaviours influences the school environment and each preceding pathway.

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