JOURNAL OF ADOLESCENT HEALTH 2003;33:231–239

INTERNATIONAL SYMPOSIUM

Changing Schools, Changing Health? Design and Implementation of the Gatehouse Project

GEORGE PATTON, M.D. FRANZCP, LYNDAL BOND, Ph.D.,
HELEN BUTLER, B.A. (Hons.), Dip. Ed., G. Dip. in Adolescent Health, AND
SARA GLOVER, Ph.D.

Purpose: **To describe the Gatehouse Project which addresses the social context of high school with an aim of changing students' sense of school connection and in turn, health risk behavior and well-being.**

Methods: **Distinguishing features of the project were its conceptual framework, implementation process, and evaluation design. The conceptual framework derived from attachment theory and focused on three aspects of the school social context: security, communication, and participation. Implementation was standardized around a survey of the school social environment, creation of a school-based action team, and the implementation of strategies matched to a school's profile of need. In addition, an early high school curriculum addressed the skills relevant to social functioning and emotional adjustment. The evaluation design was based on a cluster randomized trial involving 26 schools. It used follow-up of an individual cohort and repeat cross-sectional surveys to capture outcomes at an individual student and whole-school level.**

Results and Conclusions: **The Gatehouse Project drew on both health and education research to develop and coordinate a broad-based school health promotion intervention. It represents a promising new direction for school-based preventive work.** © ***Society for Adolescent Medicine, 2003***

KEY WORDS:
Adolescents
Health risk behavior
Health promotion
Prevention
School-connectedness
Australia

There are sound reasons to consider schools as important health-promotion settings. Young people spend more than one-third of their waking hours in school [1]. It is the principal setting in which formal education takes place and for most adolescents a center of their social lives. Twenty years ago Rutter et al [1] described the effect of school ethos on educational achievement and socially disruptive behavior. That study emphasized the quality of social relationships within the school as the principal determinant of a school's ethos and flagged the scope for health promotional intervention addressing the school social environment. More recently, school connection, a student's sense of feeling part of his or her school, feeling valued, and being treated fairly, has been a focus of research [2]. A sense of school connection is associated with lower rates of substance use, sexual risk behavior, and emotional problems as well as positive educational outcomes [3]. Thus, a proposition that establishing positive relationships with teachers and other students might affect health-related behavior, emotional well-being, and social development has a strong rationale.

From the Centre for Adolescent Health, Murdoch Childrens Research Institute and Department of Paediatrics, University of Melbourne, Victoria, Australia.

Presented in part at the International Session, "Effective preventive interventions in the school and community setting: An international perspective," at the Annual Meeting of the Society for Adolescent Medicine, Boston, Massachusetts, March 2002.

Address correspondence to: George Patton, Centre for Adolescent Health, 2 Gatehouse Street, Parkville, Victoria 3052, Australia. E-mail: gpatton@cryptic.rch.unimelb.edu.au

Manuscript accepted April 12, 2003.

The full text of this article is available via JAH Online at http://www.elsevier.com/locate/jahonline

Published by Elsevier Inc., 360 Park Avenue South, New York, NY 10010

1054-139X/03/$–see front matter
doi:10.1016/S1054-139X(03)00204-0

Despite this growing evidence that schools affect adolescent health and behavior, few interventions have focused on the school context. Most school-based interventions have used the strategies of health education to address specific issues such as tobacco and substance use, sexual health, or cardiovascular risk factors commonly within the confines of the health or physical education curriculum [4]. Such approaches are understandable, given that schools are one of the few close to universal points of access to young people at a time when behaviors and emotional problems with far-reaching effects on health are emerging [5]. However, the evidence to date has been that health education has little effect beyond the short term. Even when extended to include strategies to modify social influence, the results have been disappointing [6]. Furthermore, because schools are increasingly reluctant to give up curriculum space to an ever-growing number of specific health topics, there are doubts about the longer-term sustainability of such approaches.

One response to the disappointing findings from health education in schools has been a call for more broadly based approaches to prevention and health promotion [7]. The Health Promoting Schools development, for example, advocated drawing the principles of the Ottawa Charter for health promotion into a more comprehensive "whole of school" approach [8,9]. The charter outlined five areas for health promotion: developing personal skills, creating supportive environments, reorienting health services, strengthening community action, and advocacy. To date few school-based programs have moved beyond a focus on personal skills [4]. The reasons are complex but include difficulties in standardizing and implementing more complex interventions and in designing studies to evaluate them.

The Gatehouse Project was developed to address some of these limitations in earlier school health promotion work. This paper outlines the conceptual framework, implementation process, and evaluation strategies adopted.

Conceptual Framework

The utility of a conceptual framework should influence the choice for a particular setting. Ideally, it will communicate the idea behind the program simply and plausibly with workers in that context.

School-based health education has drawn heavily on the social learning paradigm in recent decades. More diverse theoretical frameworks used in other settings, whether focused on individual behavior (e.g., theory of reasoned action, health locus of control) or dealing with the broad social and economic determinants of health (e.g., communication theory), have been less used [10].

Attachment theory offers a further attractive alternative framework. It proposes that secure emotional connections provide a base for psychological and social development [11,12]. Although much recent work on attachment theory has been in early childhood, sound attachments underpin well-being throughout life. Emotional and behavioral problems are more likely to arise when social and interpersonal bonds are threatened or insecure. Work on the effects of life events, social support, disruption of social relationships, and social connection to family and school indicate its relevance outside of early childhood [13].

During adolescence there are marked changes in attachment to family, school, and peers. Disruption or insecurity in these relationships carries a risk of social, emotional, and behavioral problems. A sense of security appears fundamental in that abuse within the family and victimization by peers is associated with high levels of mental disorder [14]. A sense of connectedness, good communication, and perceptions of adult caring have emerged in studies of schools and families as related to a wide range of behavioral and health outcomes [3]. Finally, a sense of active engagement and broader participation in a range of contexts has emerged as a characteristic of more positive social environments with benefits in terms of self-image [2]. These three facets of the social context, security, communication, and participation, underpin an individual's sense of attachment and were the major focus in the Gatehouse Project (Figure 1).

Implementation Process

A health-promoting schools approach points to using strategies at multiple levels within a school. Thus, the promotion of interpersonal skills may, in part, take place within the formal curriculum. In contrast, reorientation of service provision takes place at a level of the school within its local neighborhood. The promotion of the social environment of a school can take place in multiple settings, ranging from the classroom to the schoolyard and sporting field. What is an appropriate strategy in one school may not be relevant in another, making it difficult to standardize an intervention.

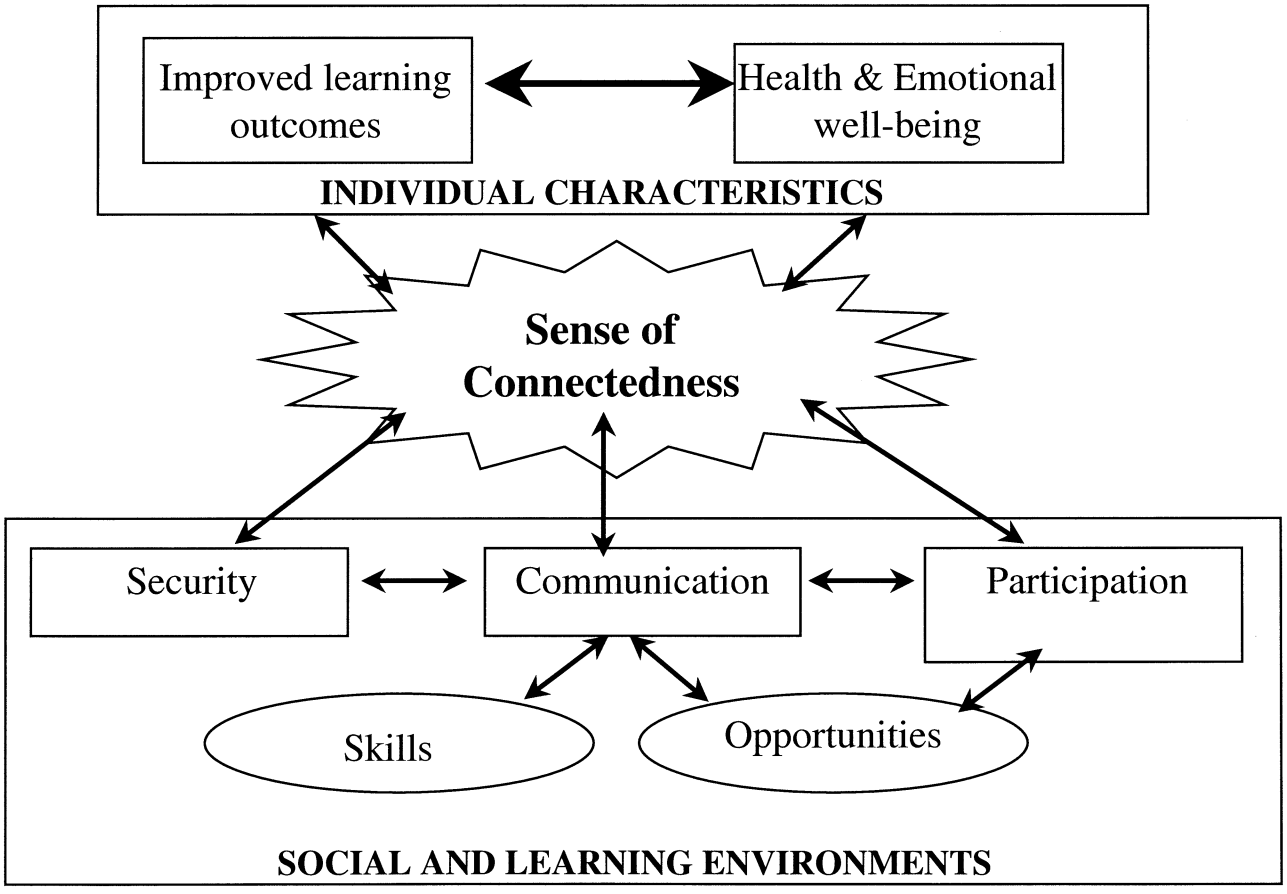

Figure 1. *The Gatehouse Project conceptual framework.*

Instead of standardizing the intervention, the Gatehouse Project standardized the process of intervention. The structured planning and implementation process incorporated three elements: (a) a survey of the school social environment from the perspective of students, (b) the creation of a school-based action team as a coordinating structure, and (c) a consultation process with a member of the Gatehouse Project team to steer implementation strategies.

This implementation process drew on methods that have previously been used in prevention and health promotion work [15,16]. The process was introduced as standardized, but in practice implementation varied with the readiness of schools to embrace a broader preventive approach and the resources available to individual schools to implement change.

Survey of the School Social Environment

The social climate profiles of schools used questionnaire data from students, a strategy pioneered in earlier prevention work [17]. The questionnaire addressed the three areas of social interaction outlined in the conceptual framework: security, communication, and participation. Items derived, for the most part, from instruments previously used in surveys of bullying, perceived social support, and attitudes to school. The initial survey of the school climate profile (risk and protective factors) in year 8 students (13- to 14-year-olds) took place in 1997, before commencement of the program. This survey was repeated at intervals of 2 years. Each participating school was provided with a report of its own social climate profile compared with that found in the control schools. (See Evaluation section.) An example of one aspect of this profile is shown in Figure 2.

The profiles assisted school teams in the setting of priority areas and strategies within a particular school. This process allowed both coordination of existing health promotional work as well as the introduction of new strategies that met the needs of a particular school. The profile of school X indicates

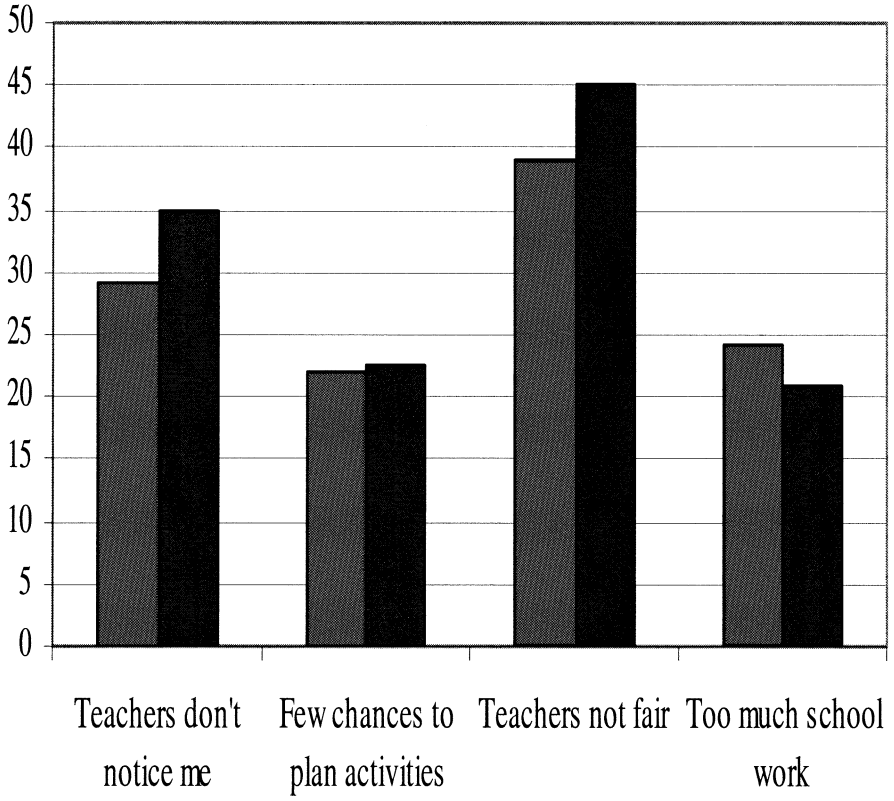

Figure 2. *Example of data feedback to an individual school (light gray) on its social profile compared with that of the average (dark gray).*

that perceptions of teachers are overly negative and that strategies to improve communication between students and teachers would be a worthwhile investment. Later repetition of the survey provided an indication of whether the social profile was changing favorably in response to the schools' work.

The School-based Action Team

The school-based action team (often called the adolescent health team) was created or adapted from an existing team to implement the relevant strategies in each school. The aim was to shift the focus from single health or social issues and a fragmented "projects" approach to that of a coordinated social development program addressing a school's priorities. The strategies used ranged from the introduction and coordination of health education in the curriculum to the changing of school structures (e.g., introduction of teacher–student learning teams or mentoring systems) and the creation of opportunities for students to engage with their local communities. To this end, the action team drew staff members from the school's senior administration, curriculum, student welfare, and year-level coordinators, as well as personnel from outside agencies linked with the school. Where feasible, the team took a formal place within the school's organizational structure.

The Gatehouse Project staff members consulted with the action team members within each of the intervention schools. The staff members consisted of educators with experience of secondary school teaching, student welfare, professional development, and curriculum design. They acted both as "critical friends" and in the professional development of teachers [18]. The role of critical friend had a formal and informal dimension. The formal dimension included providing the report of the school social profile, consultation around the setting of priorities, and support in the implementation of strategies. The informal dimension involved assistance in mobilizing resources within the local education system, building trust between staff members, where necessary challenging preexisting practices, and general encouragement to maintain the momentum.

Strategies to Promote School Social and Learning Environments

The development of a collaborative culture between those responsible for curriculum, student welfare, and administration provided a powerful means of enhancing the quality of social and learning environments [19–22]. Relationships between teachers and students in classrooms, broader opportunities for student participation and responsibility, and support structures for teachers have consistently emerged as associated with student progress and development [2,23,24]. The three main areas for implementation were the school-wide strategies, the promotion of positive classroom climates, and the introduction of a curriculum to promote social and emotional skills.

Whole-school strategies. The strategies adopted by schools varied greatly. Examples included the adaptation of guidelines for responding to and preventing bullying, the introduction of mentoring programs, and the use of peer support and peer leadership strategies to increase in the opportunities and skills for students to participate in decision-making within the school.

Bullying was an important focus. Schools were encouraged to take a pro-active stance on bullying prevention by developing policies and procedures and by training all staff members and students in those procedures. Much of this focus was on more subtle forms of bullying, such as being deliberately left out, having rumors spread, and being teased. The method of Pikas [25] of shared concern was, for example, widely adopted as a useful strategy for teachers in responding to bullying as well other instances of conflict between students.

Schools can provide diverse opportunities for engagement with staff and other students outside a focus on the standard curriculum. Where the questionnaire social profile indicated limited opportunities to engage with peers or teachers, this area became a prime focus for the action team. Strategies adopted ranged from organization change, e.g., altering class structures to allow more collaborative relationships between peers, to professional development of teachers around engagement with students in and outside the classroom. In all instances, teams were encouraged to undertake a review of school-wide strategies for rewarding and recognizing achievements academically, in sport, socially, and other relevant areas [26]. The aim was to provide opportunities for each student to establish positive attachments to individual teachers and to have an experience of being valued in school.

Promoting a positive classroom climate. Classroom climate has a major influence on perceptions of school connectedness [2]. Characteristics of a more positive climate include consistency in teacher behavior, student participation in rule setting, and the use of pro-active teaching strategies that encourage student participation.

Two broad approaches were used in the promotion of positive classroom climates: clear classroom management and interactive teaching styles. Classroom rules were negotiated between teachers and students, where possible early in the school year, and were displayed in each classroom. Examples of common rules which emerged were: no put downs, listening to others' points of view, and treating the belongings of others with care.

Teacher–student relationships and student–student relationships were enhanced through strategies such as small group work, class discussion, and interactive teaching [27]. In using the Gatehouse curriculum, the use of questions to open up discussions and to facilitate looking at ideas from different perspectives was emphasized [28]. Teachers were encouraged to maintain a flexible and inquisitive teaching stance, to facilitate an exchange of differing viewpoints, and to create opportunities to challenge and debate ideas. Where appropriate, acknowledgment of the value of all student contributions was promoted. This acknowledgment included displays and presentation of student work to "real" audiences such as parents, other students and teachers, and members of the community. Changes in instructional practices took time, and the moves toward greater collaborative relationships among students and teachers were a particular challenge for some teachers [29].

Using the curriculum. The scope for incorporating curriculum relating to behavioral and emotional competence in schools has grown as schools have come to play a broader role in equipping young people for adult life [30,31]. Australian schools have been willing to foster critical and reflective thought, problem-solving skills, and the emotional capacity to work effectively with other students. Such skills have relevance not only for academic and workplace learning but also for broad social and emotional development. The project took advantage of the emerging educational emphasis on social and emotional competence to incorporate these elements

within the standard curriculum. Further factors considered in the development of the curriculum materials included the following:

Relevance to everyday life: The materials were designed to address universal and everyday occurrences rather than exceptional or extreme adversity. The curriculum modules for year 8 students, therefore, dealt with communication in the classroom, dealing with feelings of anxiety or low mood, recognizing and reframing common difficulties (e.g., conflict with friends or parents), developing a sense of trust in others, and coping with internal and external expectations.

Integration within the mainstream curriculum: The curriculum materials were designed for use both within English classes as well as those more traditionally concerned with student health and well-being (health and physical education, personal development, and pastoral care programs). English offered an advantage of multiple classes during the school week unlike the other subjects with as few as one class per fortnight. English teachers were able to use the Gatehouse curriculum materials at the same time as teaching English and meeting essential educational objectives of that subject. This approach avoided a problem of the materials being a further "add-on" to an already overcrowded curriculum and allowed a median of 20 sessions (15 hours) of use in the first term of implementation.

Professional development of teachers: A 6-hour introductory program of teacher professional development was followed by weekly, school-based sessions concerned both with curriculum implementation and strategies to promote a positive classroom climate. This program included specific teaching strategies relevant to implementation, such as the use of small group work, personal journals, and improvisation and role-play to promote communication and exploration of alternative perspectives within classrooms.

Building the materials into multiple-year levels: The materials were designed for initial use at the year 8 level (13- to 14-year-olds), corresponding to a time when behavioral and emotional problems are commonly emerging. Teachers were assisted to build the teaching and leading approach into year 9 and 10 subjects with an aim of incorporating the program principles into teaching across multiple-year levels.

Further details and case studies are available from the project website at http://www.gatehouseproject.com.

A Whole-School Evaluation Design

The Gatehouse Project stands out from most earlier school interventions in targeting the school group as opposed to individual students. As a consequence, the evaluation differs from that used in earlier health education work. The limitations of many earlier evaluations of health education in schools have been well-documented. They include samples sizes being too small to account for clustering, high attrition rates, absence of randomization, contamination of intervention effects, and failure to include meaningful behavioral and health-related outcomes [4,6].

The Gatehouse Project encountered the additional issue of measuring change at the group level. Earlier studies of health education in schools have typically followed cluster randomized cohorts of individuals over time. Measuring individual outcomes remained relevant but could not capture change at a whole-school level. To achieve this measure, an additional strategy of using repeated cross-sectional surveys to measure the prevalence of the study outcomes in each school community over time was also adopted (Figure 3) [32].

A cluster randomization evaluation design was used after the protocol had cleared the Ethics in Human Research Committee of the Royal Children's Hospital, the Department of Education and Training, and the Catholic Education Office. Twelve educational administrative districts were randomly sampled from the 64 across the metropolitan Melbourne area. These districts were randomly assigned to intervention and control status, and schools were pooled into the two groups. From within each pool 6 government and 6 independent/Catholic schools (12 in each group) were selected. This configuration approximated the proportion of schools within each of these strata within the metropolitan area. In the non-metropolitan area, two school districts were selected from each of two larger regional centers and randomly allocated to intervention and control groups. Four schools (two government, two independent/Catholic) were selected from each non-metropolitan pool. Schools were then approached and invited to participate. All schools (both intervention and control) were provided with a grant ($A5000 pa) to support participation. All schools were asked to formally sign a commitment to participate. Regular informal contact was guaranteed with the control schools, and once a year an invitation was offered to a briefing to outline the progress of the project. One school in the intervention group declined to participate, and two further schools were unable to participate because of involvement in other school intervention programs. Three schools were unable to participate because of a threat of imminent closure or merging at the time the study commenced. The final

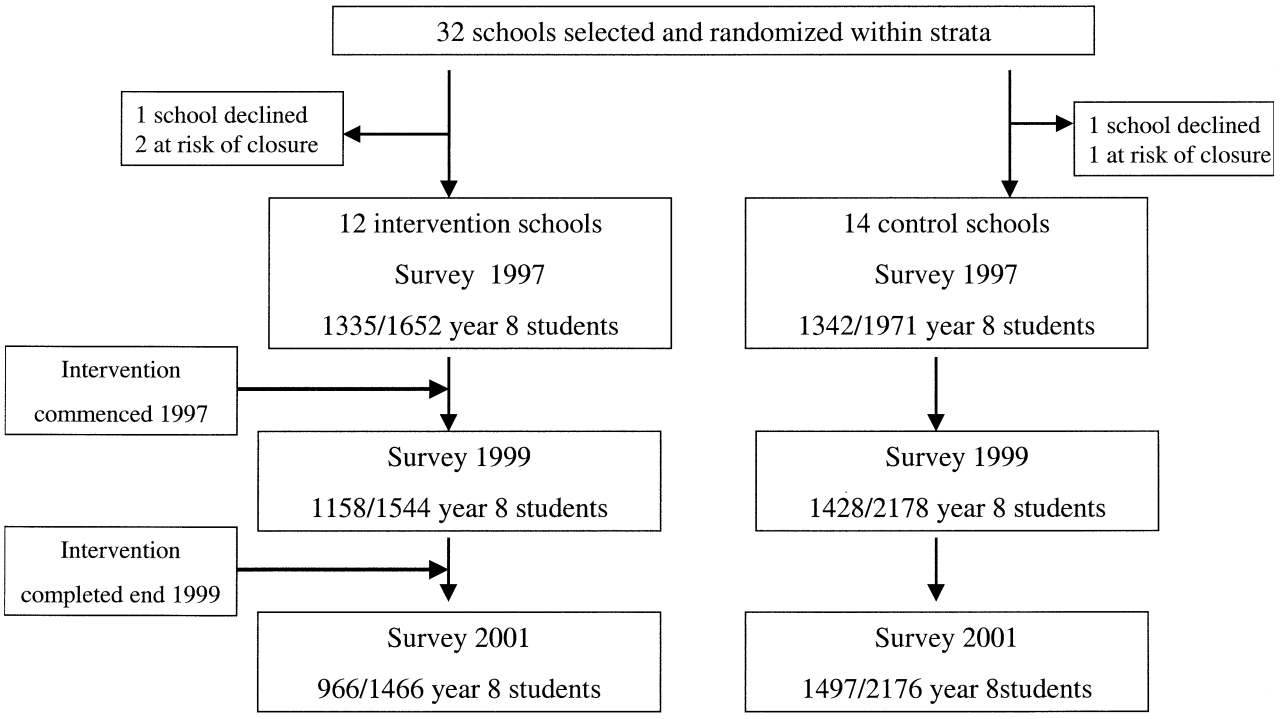

Figure 3. *Design of the whole-school evaluation outlining the study design and repeat follow-up surveys.*

numbers participating were 12 intervention and 14 controls.

The cohort of students initially surveyed in 1997 was followed on four occasions through later secondary school. For fully capturing school-level changes, three cross-sectional surveys of year 8 students were conducted at intervals of 2 years. The initial survey took place in the school classroom early in the school year (February 1997 to March 1997) and took the form of a self-administered questionnaire using laptop computers provided by the research team. Absent students were surveyed at school at a later date or by telephone. Re-survey of year 8 students took place in 1999 (between April and May) and again in 2001 (between April and May) and used items derived from the initial survey but in a pencil-and-paper format. Student participation on each occasion was voluntary and required written parental consent. The survey covered health risk behaviors (tobacco, alcohol, and illicit substance use), socially disruptive behavior (theft, interpersonal violence, property damage, and early initiation of sexual intercourse), depression, and deliberate self-harm. In addition, measures of school connection, bullying, and perceived social and emotional support were included. A lower participation rate in the intervention group on the last cross-section survey in one school arose as a result of a new school principal declining participation for the year 8 survey.

Figure 4 illustrates the study's two approaches to measurement of change. Figure 4 shows change at an individual student level in the first cohort of year 8 students (13- to 14-year-olds) to receive the intervention. It shows change in the prevalence of one index

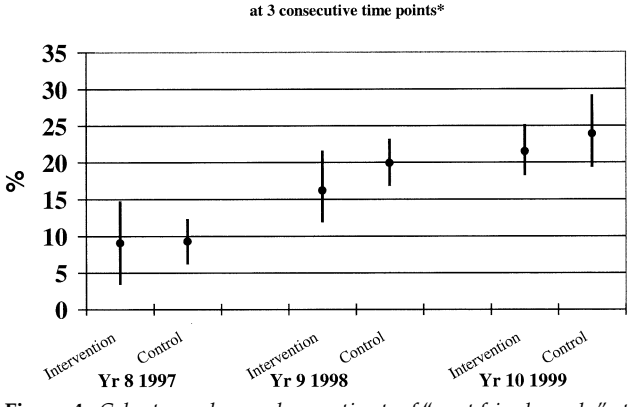

Figure 4. *Cohort sample prevalence estimate of "most friends smoke" at three consecutive time points. Survey in 1997 was undertaken early in the school year, whereas surveys in 1999 and 2001 were done later in the school year, hence a tendency to overall higher prevalence rates in controls in the later surveys.*

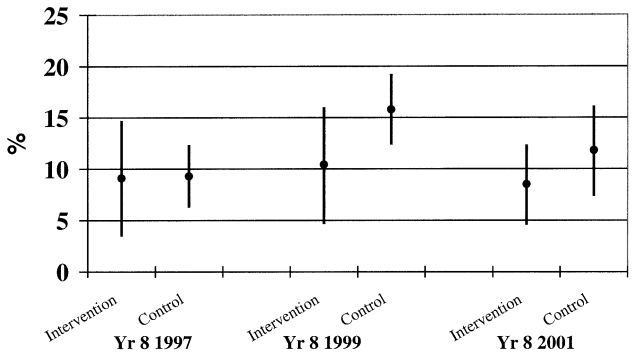

Figure 5. *Repeat cross-sectional prevalence estimate of "most friends smoke" at three time points. Survey in 1997 was undertaken early in the school year, whereas surveys in 1999 and 2001 were done later in the school year, hence a tendency to overall higher prevalence rates in controls in the later surveys.*

of tobacco use, the report of most friends being smokers, adjusted for clustering [33]. Students in index and control schools were compared with an intention-to-treat principle, i.e., including all students regardless of the extent to which they received all components of the intervention. The findings from individual student follow-up illustrate the extent to which health gains may be sustained as a student moves beyond the program focus.

Figure 5, by contrast, shows data from repeated cross-sectional surveys in intervention and control schools used to illustrate change at a whole-school level. The point estimates suggest substantial and sustained effects change in the behavioral profile of students in intervention schools in comparison to control schools. Rates of reported smoking in peers are higher in subsequent surveys, reflecting the later timing surveys in the school year. With this information taken into account, rates of reporting most friends as smokers were more than a third lower in intervention schools at re-survey in 1999 in comparison to control schools. Such a change may reflect the reduction in smoking found in intervention schools or alternatively changes in friendship patterns. The wide confidence intervals, however, illustrate the effects of clustering on the effective sample size and study power, a finding that suggests that future projects of school organizational change might ideally consider increasing substantially the number of clusters (schools) studied.

Summary

Health interventions have increasingly been developed to address settings rather than individuals. School-based interventions have lagged in this respect. With a few notable exceptions (e.g., The Comer Project [34,35] and The Seattle Social Development Project [36]), the focus for school-based programs has remained health education of the individual. In contrast, the Gatehouse Project focused on the school social environment and the individual student within that context with benefits across a range of adolescent health risk behaviors. The strategies used in the intervention have incorporated innovations from health promotion and educational practice, including: (a) the use of the theoretical framework of attachment theory that allowed a focus on the individual within his or her social context; (b) development of standardized intervention process rather than a standardized, one-size-fits-all invention; (c) the incorporation of data feedback to individual schools to allow priority setting; (d) the development of school-based action teams to coordinate program development; and (e) the use of repeated cross-sectional surveys within a cluster randomized design to allow assessment of school change.

The project illustrates the value of drawing on both health and education research traditions in building effective and sustainable school-based interventions.

This study was supported by grants from the Victorian Health Promotion Foundation, the Foundation for Young Australians, and the National Health and Medical Research Council.

References

1. Rutter M, Maughan B, Mortimore P, et al. Fifteen Thousand Hours: Secondary Schools and Their Effects on Children. London: Open Books, 1979.
2. McNeely CA, Nonnemaker JM, Blum RW. Promoting school connectedness: Evidence from the National Longitudinal Study of Adolescent Health. J School Health 2002;72:138–46.
3. Resnick MD, Bearman PS, Blum RW, et al. Protecting adolescents from harm: Findings from the National Longitudinal Study on Adolescent Health. JAMA 1997;278:823–32.
4. Lynagh M, Schofield MJ, Sanson-Fisher RW. School health promotion programs over the past decade: A review of the smoking, alcohol and solar protection literature. Health Promot Internation 1997;12:43–60.
5. McBride N, Midford R, James R. Structural and management changes that encourage schools to adopt comprehensive health promotion programs. Health Promot J Aust 1995;5:17–23.
6. Peterson AV, Kealey KA, Mann SL, et al. Smoking Prevention Project: Long-term randomized trial in school-based tobacco use prevention—Results on smoking. J Natl Cancer Inst 2000; 92:1979–91.
7. WHO/UNESCO/UNICEF. Comprehensive School Health Education: Suggested Guidelines for Action. Geneva, Sitzerland: WHO, 1992.

8. World Health Organization. Ottawa Charter for Health Promotion. Ottawa, Canada: WHO, 1986.
9. National Health and Medical Research Council. Effective School Health Promotion–Towards Health Promoting Schools. Canberra: NH&MRC, 1996.
10. Glanz K, Lewis FM, Rimer BK. Linking Theory, Research and Practice. In: Glanz K, Lewis FM, Rimer BK (eds). Health Behavior and Health Education. San Francisco: Jossey-Bass, 1997:19–35.
11. Bowlby J. Attachment and Loss: Volume 3 Sadness and Depression. Harmondsworth: Penguin, 1980.
12. Berkman LF, Glass T. Social integration, social networks, social support, and health. In: Berkmand LF, Kawachi I (eds). Social Epidemiology. New York: Oxford University Press, 2000:137–73.
13. Heaney CA, Israel BA. Social networks and social support. In: Glanz K, Lewis FM, Rimer BK (eds). Health Behavior and Health Education: Theory, Research, and Practice. San Francisco: Jossey-Bass, 1997.
14. Bond L, Carlin J, Thomas L, Patton GC. Does bullying cause emotional problems? A longitudinal study of young secondary school students. Br Med J 2001;323:480–4.
15. Green LW, Kreuter MW. Health Promotion Planning: An Educational and Environmental Approach, 2nd edition. Mountain View, CA: Mayfield, 1991.
16. Olweus D. Bullying at School, 1st edition. Oxford: Blackwell Publishers, 1993.
17. Olweus D. Bullying at school: Basic facts and effects of a school based intervention program. J Child Psychol Psychiatr 1994;7:1171–90.
18. MacBeath J. "I didn't know he was ill:" The role and value of the critical friend. In: Stoll L, Fink D (eds). Changing Our Schools: Linking School Effectiveness and School Improvement. Buckingham: Open University Press, 1996.
19. Hargreaves A, Earl L, Ryan J. Schooling for Change: Reinventing Schools for Early Adolescents. London: Falmer Press, 1996.
20. Hawkins JD, Doueck HJ, Lishner DM. Changing teaching practices in mainstream classrooms to improve bonding and behavior of low achievers. Am J Educ Res 1988;25:31–50.
21. Lynch T. Preventing Violence in Secondary Schools. School and Community Action for Full Service Schools. Sydney: Australian Centre for Equity through Education, 1996.
22. Roberts J. To the 3Rs, add the 3Ds. Educ Q Aust 1997;1:23–5.
23. Ainley J, Batten M, Collins C, Withers G. Schools and the Social Development of Young Australians. Melbourne: ACER, 1998.
24. Scheerens J, Bosker R. The Foundations of Educational Effectiveness. Oxford: Pergamon, 1997.
25. Pikas A. The common concern method for the treatment of mobbing. In: Roland E, Munthe E (eds). Bullying: An International Perspective. London: Fulton, 1989.
26. Mortimore P, Sammons P, Stoll L, et al. School Matters. London: Paul Chapman, 1988.
27. Glover S, Patton GC, Butler H, et al. The Gatehouse Project: Promoting Emotional Well-being: Team Guidelines for Whole School Change. Melbourne, Centre for Adolescent Health, 2002.
28. Glover S, Patton GC, Butler H, et al. Teaching Resources for Emotional Well-Being. Melbourne, Centre for Adolescent Health, 2002.
29. Fullan M. Changing Forces: Probing the Depths of Educational Reform. London: Falmer, 1993.
30. Beyer BK. Improving Student Thinking: A Comprehensive Approach. Boston: Allyn & Bacon, 1997.
31. Beare H. Creating the Future School. London: Routledge Falmer, 2001.
32. Atienza AA, King AC. Community-based health intervention trials: An overview of methodological issues. Epidemiol Rev 2002;24:72–9.
33. STATA. College Station, TX: Stata Corporation, 2001.
34. Comer JP. The school's role in achieving better health. Bull N Y Acad Med 1989;65:344–50.
35. Cauce AM, Comer JP, Schwartz D. Long term effects of a systems-oriented school prevention program. Am J Orthopsychiatry 1987;57:127–31.
36. Hawkins JD, Catalano RF, Morrison DM, et al. The Seattle Social Development Project: Effect of the first four years on protective and problem behaviors. In: McCord J, Tremblay RE (eds). Preventing Antisocial Behavior: Interventions From Birth to Adolescence. New York, NY: Guilford Press, 1992: 139–61.