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Evidence from a comprehensive 'health promoting school'  
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# Promoting and Building Resilience in Primary School Communities: Evidence from a Comprehensive 'Health Promoting School' Approach

**Key words:** mental health; resilience; health-promoting school

## Introduction

Recent theoretical developments in mental health promotion suggest that psychological well-being has its roots in resilience (Commonwealth Department of Health and Aged Care, 2000). 'Resilience' is defined as the capacity of individuals, schools, families and communities to cope successfully with everyday challenges, including life transitions, times of cumulative stress and significant adversity or risk

(Rutter, 1990 p184). It refers to those characteristics of children and their experiences in families, schools and communities that allow them to thrive despite exposure to adversity and deficiencies in the settings of their daily lives.

Resilient children have various strengths or internal assets which, when coupled with environmental or external strengths, can be described as protective factors. Typically, resilient children are recognised by their high self-esteem, internal locus of control, optimism and clear aspirations, achievement and goal-orientation, reflectiveness and problem-solving capacity, respect for the autonomy of themselves and others, healthy communication patterns, and the

## A B S T R A C T

*This paper reports on the first phase of a multi-strategy health promotion project which uses a whole-school approach to promote resilience in children of primary school age in school, family and community settings in urban and rural/remote locations in Queensland, Australia. The study population comprised students from Years 3, 5, and 7 (ages 8, 10, 12 years), their parents/care-givers and staff in 20 primary schools. Evidence emerging from this phase of the project confirms that the school environment makes a major contribution to the development of psychological resilience in children. Schools in which students reported more positive adult and peer social*

*networks and feelings of connectedness to adults and peers, and a strong sense of autonomy, were associated with higher self-ratings of resilience in the students. There was also high concurrence by parents and caregivers regarding perceptions of the school environment. These schools rated more highly on 'health promoting school' (HPS) attributes and principles. Characteristics of such schools included features like shared decision-making and planning, community participation, a supportive physical and social environment, good school-community relations, clearly articulated health policies and access to appropriate health services.*

capacity to seek out mentoring adult relationships (Rutter, 1987; Fuller, 1998). Personal resilience is a foundation for positive development throughout childhood and adolescence, and is thought to derive from the accrual of both internal and external protective factors in a variety of settings, which themselves may be described as 'resilience-promoting' (Rutter, 1990; Gilgun, 1996; Coll *et al.*, 1998).

Several key longitudinal child development studies identify the family, school and community as social settings that play critical roles in providing opportunities for acquisition of both internal and external protective factors associated with resilience (Gore & Eckenrode, 1994; Howard *et al.*, 1999). Social cohesion, exposure to a warm, caring and supportive environment, and positive emotional attachments play critical roles in determining physical and mental health and educational and social outcomes during childhood (Morrow, 1999). Children exposed to such conditions are at reduced risk of numerous physical and mental health disorders, including depression and associated health risk behaviours (Morrow, 1999; Onyx & Bullen, 1997; Berkman *et al.*, 2000). This fits with a socio-environmental approach to health promotion (WHO, 1996a; 1996b; 1999). It also has been reported that environments providing low emotional support, lack of availability of attachments and low perceived adequacy of support from parents/caregivers, teachers and other adults, and peers have been strongly linked to mental illnesses such as depression (Gore & Eckenrode, 1994; Masten, 1994; Rutter, 1987; Marmot & Wilkinson, 2000).

Recognition of the role of the school environment in promoting the development of mental health and psychological resilience in children and young people is increasing worldwide. Schools provide a critical context in shaping children's self-esteem, self-efficacy and sense of control over their lives. For children in middle childhood (ages 5-12 years), school may in fact play an even more significant role than the family unit, since it exposes children to the powerful influence of teacher support and peer networks (Grotberg, 1996).

In addition to promoting adoption of a curriculum in which health is specifically integrated, the HPS approach recognises the significance of school-based health policies, links with health services and partnerships between the school, the family and community (WHO, 1996a; 1996b; 1999). Recent evidence supports the contention that the HPS approach successfully creates an environment rich in social capital (Lemerle & Stewart, forthcoming). The organisational and social factors inherent in the HPS approach foster children's emotional or psychological resilience by building resilience at an organisational level,

such that resilient schools are healthy schools. A number of studies have found that factors inherent in the HPS framework, such as school organisational structures, educational practices, school climate, school-family and school-community relationships, are associated with the promotion of students' critical reflection, sense of belonging and sense of being socially supported, thus in turn promoting their resilience and mental health (Solomon *et al.*, 1996; Battistich *et al.*, 1995).

This project builds on previous research that has supported the notion that the HPS approach promotes school environments rich in social capital, by exploring the relationships between various aspects of the school environment consistent with the HPS approach and children's resilience. It seeks to demonstrate that the HPS approach may provide a model of practice for promoting this aspect of children's development.

## Methods

### Research design

A cross-sectional design is being employed to study cohorts of children in 20 government and Catholic school communities as part of a three-year, multi-strategy health promotion project. The project is oriented towards a whole-school approach to promoting resilience in children of primary school age in school, family and community settings.

### Subjects and procedures

The funding body (Health Promotion Queensland) required the project to target families and schools in low socio-economic catchment areas in urban and rural/remote locations in Queensland, Australia. The selected areas included higher than average proportions of single parent families and families with above-average unemployment, transient populations, a relatively high Aboriginal and Torres Strait Island population, and a substantial culturally and linguistically diverse (CALD) population. The study population in this phase of the project comprised students from years 3, 5, and 7 (ages 8, 10, 12 years), their parents or care-givers, and school staff. The target sample size was 3,146 students, their parents/caregivers and 1,103 staff in urban and rural/remote locations in Queensland, Australia.

Baseline data collection for students, parents/caregivers and staff was carried out in November and December 2003. Data from the student sample were collected in the school classrooms by teachers. Parents/caregivers completed the questionnaire at home and returned the survey to

school. Data collection for the staff sample was carried out through distribution of questionnaires at staff meeting organised by the school principals.

### Measurements

Student resilience was measured using a modified version of the California Healthy Kids Survey (the Student Resilience Survey, California Department of Education, 2003). Students were asked questions about their feelings at home and school. Parents or caregivers provided data about the school and family climate, using a combination of sub-scales and items from Hart *et al* (2000), Zubrick *et al* (2000) and McCubbin *et al* (1996) (the Parents/Care-provider Survey). School staff reported on organisational factors relevant to the HPS approach, using the HPS Audit Checklist (Lemerle & Stewart, forthcoming) and a modified Hart *et al* (2000) instrument (the Staff Survey). All self-report questionnaires used a five-point rating scale format ranging from 'never' to 'always'. The sub-scales or dimensions of the three surveys used for this study are shown in *Table 1*, below.

### Data analysis

All data were analysed using the SPSS package version 11.0. The 20 schools were divided into three groups (Low, Average and High HPS) on the basis of HPS Scale scores. The independent variable was the summed score derived from each of the school environment dimensions (HPS Scale), and the dependent variables were

- the student resilience scale
- the student protective factors scale
- the scale assessing parents'/caregivers' perceptions of the school environment, as listed in *Table 1*.

Thus dependent variable scores were derived from items related to communication and co-operation, self-esteem, empathy, help-seeking, personal goals and aspirations, as well as protective factors including parent support, peer support, teacher support and other adult support from the Student Survey, together with the ten sub-scales indicated above in the Parent/Caregivers survey.

As all the subscales were modified from other studies, principal component analysis was used to assess the variances explained by each subscale and Cronbach  $\alpha$  was used to examine the internal consistence of each subscale.

The differences between three HPS groups on student resilience factors, protective factors and school environment factors were analysed, using the multivariate analysis

of variance approach, to examine the association between HPS and student resilience, protective factors and school environment. If there were significant associations between HPS and resilience factors, protective factors and school environment, the Univariate analysis of variance (Univariate ANOVAs) was used to identify the components of resilience factors, protective factors and school environment subscales which may contribute to the differences between the HPS groups. *Post hoc* analysis (Tukey's Honestly Significant Difference Test) was used to compare the three groups on the resilience factors, protective factors and school environment subscales.

Potential confounding factors such as student age, gender, parent/caregivers education and family income were thought to have the potential to influence performance on student resilience factors, protective factors and school environment subscales; they were analysed by multivariate

**TABLE 1** *Sub-scales/Dimensions of the Student Resilience Survey, the Parents/Caregivers Survey and the Staff Survey*

|  |   |
|--|---|
| <b>Staff Survey</b>  |   |
| <i>HPS scale</i>   |   |
| <ul style="list-style-type: none"> <li>■ Health policy: implementing health-related policies in school</li> <li>■ Physical environment: maintaining/improving school physical environment</li> <li>■ Social environment: promoting a positive/supportive social environment</li> <li>■ School – community relations: promoting/enhancing relationships with community</li> <li>■ Personal skills building: implementing skill-building strategies</li> <li>■ Access to health services: promoting regular access to appropriate services</li> <li>■ Participation in school planning and development: contribution of whole school community – students, parents, staff and community</li> </ul> |   |
| <b>Student Survey</b>  |   |
| <i>Resilience scale</i>  | <i>Protective factor scale</i>  |
| <ul style="list-style-type: none"> <li>■ Self-esteem</li> <li>■ Empathy</li> <li>■ Goals and aspirations</li> <li>■ Communication and co-operation</li> <li>■ help-seeking</li> </ul>  | <ul style="list-style-type: none"> <li>■ Feeling connected to adults at home</li> <li>■ Feeling connected to adults in community</li> <li>■ Peer support</li> <li>■ Autonomy experience</li> <li>■ Prosocial peers</li> <li>■ Prosocial groups</li> </ul> |
| <b>Parents/Caregivers Survey</b>   |   |
| <i>School environment scale</i>  |   |
| <ul style="list-style-type: none"> <li>■ School morale</li> <li>■ School tension and staff pressure</li> <li>■ Excessive expectation of students in school</li> <li>■ Rules, regulations and discipline</li> <li>■ Student behaviour management</li> <li>■ Goals and objectives</li> <li>■ Student growth and development</li> <li>■ Curriculum</li> <li>■ Parental involvement</li> <li>■ Staff-family relationship</li> </ul>  |   |

analysis of variance. As student resilience, protective factors and school environment may confound one another in the analysis of the association between HPS and these factors, they were analysed by three Univariate ANOVAs models.

## Results

The final sample in the first phase of the project comprised 2,580 students from Years 3, 5, and 7 (ages 8, 10, 12 years), their parents or care-givers, and school staff, which represented a student participation rate of 83.8%. In addition, 1,291 parents/caregivers with response rate of 42.5% and 422 staff with response rate of 40.7% were surveyed.

The mean age of this student sample was 8.42 years ( $SD = 1.24$ ) for Year 3 students, 10.04 years ( $SD = 0.39$ ) for Year 5 students, and 12.05 years ( $SD = .41$ ) for Year 7 students. There were no differences in mean ages of boys and girls, or in the response rates across the school years (Year 3: 31.4 %; Year 5: 33.7 %; Year 7: 34.9 %). Most of the students (86.5%) were born in Australia.

Most of the parents/caregiver sample was female (88.8%). Over 40% (43.2%) had up to 12 years education level, more than a third were engaged in full-time home duties, and 28.6% have less than AU\$30,000 family annual income. Dual-parent families were the most common, comprising 74.3% of the sample.

As the whole school staff participated in the study, the staff sample was predominantly female, and most were teaching staff. The distribution of teaching staff across the school years was similar (Year 3: 12.9%; Year 5: 12.7%; Year 7: 15.4%). Most of the staff had worked in the same school for between three and ten years.

The data for the HPS scale (derived from the staff), the student resilience scale, the student protective factor scale and the parent/caregiver school environment scale are presented in **Table 2**, below. **Table 2** also shows the results of the principal component analysis and reliability analysis of these four subscales across the three surveys (Staff Survey, Student Survey and Parents/caregivers Survey).

The staff HPS scale, student resilience scale, student protective factor scale and parents/caregivers social environment scale demonstrated high internal consistency of their component items, Cronbach's  $\alpha$  ranging from 0.83 to 0.95, and variance explained for each subscale ranges from 45.91% to 68.00%.

The differences between Low HPS, Average and High HPS groups on student resilience, protective factors and dimensions of the school environment, are presented in **Tables 3-5**, overleaf.

Multivariate analysis of variances showed that HPS has significant effects on the student resilience ( $F = 2.33, p < .01$ ), protective factors ( $F = 2.83, p < .001$ ) and school environment ( $F = 4.06, p < .001$ ).

Univariate ANOVAs analysis showed that four components of student resilience, namely communication and cooperation, self-esteem, empathy, and goals and aspirations (**Table 3**), six components of the protective factors - all except feelings of connectedness to adults in the community (**Table 4**) - and eight components of school environment - all except school goals and objectives (**Table 5**) - contributed significantly to the differences between the three (Low, Average, and High) HPS groups.

Tukey's HSD showed a similar pattern, in that the High HPS group had higher scores than both the Average and Low HPS groups for student resilience, protective and

**TABLE 2** Results of Principal Component and Reliability Analysis for the HPS, Resilience Factors, Protective Factors and School Environment Sub-scales

| Scale characteristics         | Staff Survey                                     | Student Survey                          |   | Parents/Caregivers Survey                 |
|-------------------------------|--|---|---|---|
|                               | HPS scale  | Resilience scale                        | Protective factor scale   | School environment scale                  |
| Items in the scale            | 40   | 12                                      | 35  | 36  |
| Scale                         |  |   |   |   |
| Cronbach's alpha              | .95  | .83                                     | .92   | .95                                       |
| % variance explained by items | 68.00%   | 45.91%                                  | 56.29%  | 58.06%                                    |
| Scale range of scores         | 1.65-4.92  | 1.33-5.00                               | 2.41-5.00   | 1.75-5.00                                 |
| Scale mean scores (SD)        | 3.06 (.50)                                       | 4.13 (.55)                              | 4.11 (.47)  | 3.77 (.59)                                |
| Median values                 | 3.06   | 4.22                                    | 4.18  | 3.82                                      |
| Higher scores (values)        | Positive perception of adoption of HPS by school | Positive orientation towards resilience | Positive perceptions of connectedness of adult and peer support | Positive perception of school environment |

**TABLE 3** The Comparison of Low HPS, Average and High HPS Groups on Student Resiliency Measures Adjusting for Age, Gender and SES Factors (n = 2372)

| Student resiliency                | Low HPS group<br>M (SE)<br>(n = 225) | Average HPS group<br>M (SE)<br>(n = 613) | High HPS group<br>M (SE)<br>(n = 191) | F    | df    | P    | Tukey's HSD   |
|-----------------------------------|--------------------------------------|--|---------------------------------------|------|-------|------|---------------|
| 1. Communication and co-operation | 4.23 (.05) a                         | 4.23 (.03) b                             | 4.44 (.05) c                          | 5.66 | 1,028 | 0.00 | a,c*; b,c**   |
| 2. Self-esteem                    | 4.19 (.04) a                         | 4.21 (.03) b                             | 4.35 (.05) c                          | 3.93 | 1,028 | 0.01 | a, c*; b,c**  |
| 3. Empathy                        | 3.96 (.06) a                         | 4.07 (.03) b                             | 4.24 (.06) c                          | 5.28 | 1,028 | 0.00 | a, c** ; b,c* |
| 4. Help-seeking                   | 3.83 (.06) a                         | 3.87 (.04) b                             | 3.96 (.07) c                          | 1.02 | 1,028 | 0.22 |               |
| 5. Goals and aspirations          | 4.28 (.05) a                         | 4.40 (.03) b                             | 4.50 (.05) c                          | 4.02 | 1,028 | 0.01 | a,c**         |

**Notes**

1. a, b, c are labels for ease of reporting comparisons between the means of three groups: (a = low HPS group, b = average group and c = high HPS group)
2. Only comparisons which reached statistical significance are reported
3. HSD: Tukey's Honestly Significant Difference Test
4. Significance level: \* p < .05, \*\* p < .01, \*\*\* p < .001
5. M refers to adjusted means and SE refers to standard error

**TABLE 4** The Comparison of Low HPS, Average and High HPS Groups on Students' Perceptions of Protective Factors Adjusting for Age, Gender and SES Factors (n = 1017)

| Protective factors                      | Low HPS group<br>M (SE)<br>(n = 206) | Average HPS group<br>M (SE)<br>(n = 558) | High HPS group<br>M (SE)<br>(n = 183) | F    | df  | P    | Tukey's HSD    |
|---|--------------------------------------|--|---------------------------------------|------|-----|------|----------------|
| 1. Connectedness to adults at home      | 4.3 (.04) a                          | 4.47 (.03) b                             | 4.54 (.04) c                          | 3.29 | 946 | 0.02 | a,b*; a,c*     |
| 2. Connectedness to adults at school    | 4.0 (.05) a                          | 4.15 (.03) b                             | 4.27 (.06) c                          | 3.33 | 946 | 0.18 | a,c*           |
| 3. Connectedness to adults in community | 4.46 (.04) a                         | 4.58 (.03) b                             | 4.56 (.04) c                          | 1.77 | 946 | 0.60 |                |
| 4. Autonomy experience                  | 3.4 (.06) a                          | 3.64 (.04) b                             | 3.85 (.06) c                          | 9.36 | 946 | 0.00 | a, c*; b, c*   |
| 5. Peer support                         | 3.94 (.05) a                         | 4.09 (.03) b                             | 4.16 (.06) c                          | 2.84 | 946 | 0.15 | a,c*           |
| 6. Prosocial peers                      | 3.79 (.06) a                         | 3.77 (.04) b                             | 3.97 (.06) c                          | 4.69 | 946 | 0.17 | b,c*           |
| 7. Prosocial group                      | 3.97 (.06) a                         | 4.00 (.04) b                             | 4.28 (.06) c                          | 8.04 | 946 | 0.01 | a,c***; b,c*** |

**Notes**

1. a, b, c are labels for ease of reporting comparisons between the means of three groups: (a = low HPS group, b = average group and c = high HPS group)
2. Only comparisons which reached statistical significance are reported
3. HSD: Tukey's Honestly Significant Difference Test
4. Significance level: \* p < .05, \*\* p < .01, \*\*\* p < .001
5. M refers to adjusted means and SE refers to standard error

**TABLE 5** The Comparison of Low HPS, Average and High HPS Groups on Caregivers' Perceptions of School Environment Adjusting for Age, Gender and Maternal SES (n = 1013)

| School environment                        | Low HPS group<br>M (SE)<br>(n = 208) | Average HPS group<br>M (SE)<br>(n = 558) | High HPS group<br>M (SE)<br>(n = 177) | F     | df  | P    | Tukey's HSD           |
|---|--------------------------------------|--|---------------------------------------|-------|-----|------|-----------------------|
| 1. School morale                          | 3.78 (.05) a                         | 4.06 (.03) b                             | 4.18 (.06) c                          | 15.13 | 942 | 0.00 | a,b***; a,c***        |
| 2. School tension and staff pressure      | 3.43 (.06) a                         | 3.60 (.04) b                             | 3.83 (.07) c                          | 9.23  | 942 | 0.00 | a,c***; b,c**         |
| 3. Rules, regulations and discipline      | 3.57 (.06) a                         | 3.63 (.04) b                             | 3.83 (.07) c                          | 4.60  | 942 | 0.01 | a,c*                  |
| 4. Student behaviour management           | 3.22 (.06) a                         | 3.45 (.04) b                             | 3.73 (.06) c                          | 16.95 | 942 | 0.00 | a,b***; a,c***; b,c** |
| 5. Student growth and development         | 3.91 (.05) a                         | 3.92 (.03) b                             | 4.11 (.05) c                          | 4.91  | 942 | 0.01 | b,c*                  |
| 6. Expectation of students in school      | 3.61 (.06) a                         | 3.70 (.04) b                             | 3.84 (.07) c                          | 3.32  | 942 | 0.03 | a,c*                  |
| 7. Parental involvement and participation | 3.55 (.05) a                         | 3.59 (.03) b                             | 3.80 (.06) c                          | 6.16  | 942 | 0.00 | a,c*; b,c*            |
| 8. Staff-family relationship              | 3.60 (.06) a                         | 3.68 (.04) b                             | 3.98 (.07) c                          | 9.25  | 942 | 0.00 | a,c***; b,c**         |
| 9. Goals and objectives                   | 3.95 (.05) a                         | 3.97 (.03) b                             | 4.03 (.06) c                          | .52   | 942 | 0.59 |                       |
| 10. Curriculum                            | 3.91 (.06) a                         | 4.03 (.04) b                             | 4.12 (.07) c                          | 2.60  | 942 | 0.07 |                       |

**Notes**

1. a, b, c are labels for ease of reporting comparisons between the means of three groups: (a = low HPS group, b = average group and c = high HPS group)
2. Only comparisons which reached statistical significance are reported
3. HSD: Tukey's Honestly Significant Difference Test
4. Significance level: \* p < .05, \*\* p < .01, \*\*\* p < .001
5. M refers to adjusted means and SE refers to standard error

school environment factors. These results therefore suggest that schools that staff perceive to be adopting the HPS approach are significantly associated with the development and support of student resilience, protective factors and a supportive school environment.

**Table 6**, below, shows the associations between HPS and the three independent variables using the general scores of the three variables in three different Univariate ANOVAs models.

**Table 6** indicates that a significant association was found between HPS and student protective factors after controlling for the confounding effects of student age, gender, maternal SES, student resilience and school environment factors. Tukey's HSD further showed that schools with high HPS scores had significantly higher scores on student protective factors than schools with low HPS scores. A significant association was also found between HPS and parent/caregivers' perceptions of school environment after controlling for student age, gender, maternal SES and the student resilience and protective factors. Thus, schools with High HPS scores had increased school environment scores. Tukey's HSD also showed that schools with high HPS scores had higher school environment scores than schools with Average and Low HPS scores. There was no significant association between student resilience and HPS after student age, gender, protective factors and school environment were controlled in the analysis.

## Summary and discussion

Australia's National Action Plan for Promotion, Prevention and Early Intervention for Mental Health identifies increased well-being, quality of life and resilience as core outcome indicators for monitoring and evaluating mental health interventions in Australia. However, the best mechanism or approach to employ to achieve such improvements remains elusive. The results of this study suggest that for primary school aged children, the development of student resilience, the sense of feeling connected to adults and teachers, having good peer relationships and having a strong sense of autonomy and self capacity, and parental recognition of a supportive school environment, are influenced by the degree to which schools support and apply a 'health promoting school' environment and approach.

Staff held a range of views about their school's 'HPS nature', that is, whether they could be described as having shared decision-making and planning, community participation, a supportive physical and social environment, good school-community relations, clearly articulated health policies and access to appropriate health services. Those staff who held positive views about their school's HPS nature were more likely to have students indicating that they had positive perceptions of their resilience behaviour, protective factors and supportive school environment on the part of parents/caregivers than staff who held less positive views of their school's HPS nature. These relationships

**TABLE 6** *The Comparison of Low HPS, Average and High HPS Groups on Student Resilience, Protective Factors and School Environment Adjusting for Age, Gender, Maternal SES, Resilience Factors, Protective Factors and School Environment (n = 1013)*

|                       | Low HPS<br>M (SE)<br>(n = 161) | Average HPS<br>M (SE)<br>(n = 458) | High HPS<br>M (SE)<br>(n = 149) | Confounding factors  | F    | df  | p    | Tukey's<br>HSD |
|-----------------------|--------------------------------|------------------------------------|---------------------------------|--|------|-----|------|----------------|
| 1. Resilience factor  | 4.19 (.02) a                   | 4.16 (.01) b                       | 4.18 (.02) c                    | Student age, gender,<br>maternal SES,<br>protective factors,<br>school environment | .65  | 767 | 0.52 |                |
| 2. Protective factor  | 4.07 (.02) a                   | 4.11 (.01) b                       | 4.14 (.02) c                    | Student age, gender,<br>maternal SES,<br>resilience factors,<br>school environment | 2.07 | 767 | 0.12 | a,c*           |
| 3. School environment | 3.70 (.04) a                   | 3.76 (.02) b                       | 3.88 (.04) c                    | Student age, gender,<br>maternal SES,<br>resilience factor<br>protective factors   | 4.11 | 767 | 0.02 | a,c**; b,c*    |

*Notes*

1. a, b, c are labels for ease of reporting comparisons between the means of three groups: (a = low HPS group, b = average group and c = high HPS group)
2. Only comparisons which reached statistical significance are reported
3. HSD: Tukey's Honestly Significant Difference Test
4. Significance level: \* p < .05, \*\* p < .01
5. M refers to adjusted means and SE refers to standard error

were exhibited in four of the resilience indicators, six of the protective factors and eight of the school environment factors. The Univariate ANOVAs analyses (*Table 6*) indicated that students' perceptions of resilience are dependent upon the protective factors (feelings of connectedness to parents/caregivers, teachers, peer relationships and autonomy experience) and school environment. It is plausible that the influence of HPS on student resilience is by means of building positive protective factors and creating a supportive school environment.

The significant association between protective factors and HPS, indicated in *Table 4*, and the association between school morale and perception of school tension and staff stress on the part of parents/caregivers, indicated in *Table 5*, suggest that a school community can have a positive influence on children's perception of resilience and sense of connectedness to others and the school. This depends on whether a school creates a healthy school environment, organisation and school ethos. Thus, health-promoting environments can support health-promoting practices at individual as well as organisational level. Schools adopting the HPS approach are likely to create environments rich in social capital (Lemerle & Stewart, forthcoming). A school, as a social organisation whose members know, care about, trust and support one another, which has common goals and a sense of shared purpose (Battistich *et al*, 1995), provides the ideal situation to support the development of resilience in children. Strong associations have consistently been found between diminished social capital at the level of family and the school and children's academic attainment, completion of high school and increased behaviour problems (Marmot, 1998; Berkman *et al*, 2000; Putnam, 2000; Runyan *et al*, 1998; Cooper & Thornton, 1999). The research reported here supports the argument that the adoption of a health-promoting school approach builds 'organisational resilience' through increased levels of protective factors and a supportive environment. This in turn fosters and builds resilience – accepted as an important mental health indicator in children (Masten, 1994; Marmot, 1998).

The HPS approach was significantly associated with whole school environment including school-family and school-community relationships, as evidenced by the associations between HPS and parental involvement and participation in school activities, and staff-family relations (*Table 5*). This suggests that the level of partnerships formed between school and family and school and community is determined by whether a school adopts a whole-school approach. Active participation in school activities has been found to be associated with increased student, parent/caregiver and staff empowerment, which is related

to positive mental health (Berkman *et al*, 2000). The HPS approach creates opportunities for the engagement of students, parents, teachers and community, thereby reinforcing meaningful social roles, including parental, familial, teaching and community roles, which, in turn, provides a sense of value and belonging to school and connectedness to others (Berkman *et al*, 2000).

The present study has demonstrated that schools employing the HPS approach are linked not only to the development of student resilience but also to important protective factors and the overall school environment. Such factors are associated with the development of social capital and support a multi-level approach to mental health promotion, as advocated by the World Health Organization (1996a; 1996b; 1999).

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