

**SENSE OF SCHOOL MEMBERSHIP:  
A MEDIATING MECHANISM LINKING STUDENT PERCEPTIONS  
OF SCHOOL CULTURE WITH ACADEMIC AND BEHAVIOURAL FUNCTIONING  
(BASELINE DATA REPORT OF THE SCHOOL CULTURE PROJECT)**

by

David J. DeWit

Lesley Akst  
Kathy Braun  
Jennifer Jelley  
Lorrie Lefebvre  
Christine McKee  
Barbara J. Rye  
Martin Shain

Social Prevention and Health Policy Research Department

Kim Karioja

Blanche Beneteau  
Sandy Bollenbach  
Reggie Caverson  
Wendy DeMarco  
Jane Fjeld  
Louise LaRocque-Stuart  
Rene Lauzon  
Christine Lebert  
Michelle Ott  
Gail Schmidt  
Andrea Stevens-Lavigne  
Dennis Walker

Communications, Education, and Community Health Department



Centre  
for Addiction and  
Mental Health  
Centre de  
toxicomanie et  
de santé mentale

**Sense of School Membership: A Mediating Mechanism Linking Student Perceptions of School Culture with Academic and Behavioural Functioning (Baseline Data Report of the School Culture Project)**

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## EXECUTIVE SUMMARY

### Background

- Guided by the Schools as Communities Perspective, this study tested the hypothesis that students exposed to a favourable school culture (marked by a warm and caring social atmosphere, positive student behavioural norms, a strong school emphasis on academics, and a strong school emphasis on learning goals focussed on mastery and understanding of curriculum material) would develop a strong personal sense of school membership based on feelings of support and acceptance and belonging from classmates and teachers. Feelings of membership in turn were expected to improve academic and behavioural functioning and overall mental health both directly and indirectly through enhancements in self-esteem.
- To test this hypothesis, information was obtained on just over 2,400 grade 9 students attending 22 Ontario high schools. Student self-reports of school culture, attitudes, and behaviour were collected in the fall of 1999, the spring of 2000, and the fall/winter of 2000-2001 (when students enrolled in grade 10). Within each school, and at each time point, student self-reports were supplemented with environmental assessments of school climate completed independently by two outside raters and demographic and socio-economic characteristics of the local catchment area population. Data analytic techniques consisted of regression analyses, structural equation modelling, and multilevel modelling suited for the analysis of nested data. Results of this report are based on the fall 1999 data collection.

### Summary of Findings

- Descriptive results revealed that most students (two-thirds or more) provided favourable ratings of their school culture and reported a strong personal sense of school membership. However, a significant minority of youth (between 10 and 15 percent) were less than satisfied with their environment and felt personally detached from school life.
- Students most satisfied in terms of a personal sense of school membership were females, younger students, and students from stable family backgrounds (i.e., those not experiencing parental break-up, frequent family moves, and frequent school changes). Students who reported socially supportive family members, close parental monitoring of their activities, and strong parental interest in their education, expressed a strong satisfaction with school life. Family socio-economic status was less consistently related to sense of school membership. A notable exception was parental education. Students who reported maternal post-secondary education (at least some college or university) tended to express a strong sense of membership. Sense of school membership was significantly higher among students who reported active involvement in structured community activities occurring outside the context of the school (e.g., clubs, art lessons).
- Compared to detached or alienated youth, students high on sense of school membership reported less frequent use of substances (alcohol, tobacco, and illicit drugs), lower thrill-seeking behaviour, fewer incidents of in-school victimization, lower levels of school misconduct, fewer disciplinary referrals for inappropriate behaviour, lower rates of truancy,

and stronger academic performance. These students were also less likely to suffer from symptoms of depression and social anxiety as well as symptoms of several externalizing behavioural problems such as alcohol abuse, conduct disorder, oppositional disorder, and attention deficit/hyperactivity.

- Multivariate analyses identified several aspects of school culture uniquely associated with enhanced student feelings of school membership and reduced academic and behavioural difficulties. These included: student relations marked by mutual trust and respect, minimal school emphasis on ability learning goal structures (e.g., structures focussing on ability, social comparison, and competition in the evaluation and assessment of student performance), a strong school emphasis on task-focussed learning goals (e.g., structures focussing on mastery and understanding of curriculum material), and a strong school emphasis on academic pursuits. Positive student body behavioural norms (e.g., little cheating, stealing, fighting) was directly associated in a positive fashion with several outcomes. However, for the most part, sense of school membership yielded weak and non-significant relationships with behavioural norms. Unexpectedly, student perceptions of the quality of teacher/student relationships at school were linked to feelings of depression and social anxiety.
- Family and peer group characteristics (and to a lesser extent involvement in structured out of school community activities) operated along side school culture as consistent predictors of student sense of school membership and academic and behavioural functioning. Students exposed to a stable and supportive family environment in which parents closely monitored their activities, and took an active interest in their education were more likely than others to express a strong sense of school membership and less likely to experience a range of academic and behaviour problems. Peer delinquency was strongly linked to a range of problem behaviour outcomes. Students who reported heavy involvement in community activities (e.g., clubs, art lessons) were more likely than others to express strong feelings of teacher support and less inclined to exhibit problem behaviour.
- In support of the Schools as Communities perspective, results from our structural equation models revealed that the beneficial effects of school culture on student behaviour were achieved in a mostly indirect fashion by increasing sense of school membership. In other words, students who provided favourable assessments of their school culture (most notably high quality student relations, a weak school emphasis on ability-focussed learning goal structures, and a strong school emphasis on academics) reported a strong personal sense of school membership based on feelings of classmate and teacher support. Those high on sense of membership were in turn less likely to suffer from a range of academic and behavioural difficulties either directly or indirectly through enhancements in self-esteem. These results applied to males and females and those reporting weak vs. moderate-to-strong levels of family functioning.
- Sense of school membership (aggregated to the level of the school) emerged as a significant predictor of between-school differences in student self-reports of disciplinary referrals, victimization, and symptoms of oppositional disorder. Schools in which students expressed strong feelings of teacher support were less likely than others to experience student victimization and disciplinary referrals for inappropriate behaviour. In addition, symptoms of

oppositional disorder were lower in schools where students reported strong feelings of classmate support.

- Schools assessed by independent raters as high on appreciation and recognition of student achievement and promotion of student activities experienced fewer student disciplinary referrals and fewer symptoms of oppositional disorder. Other predictors were rooted in environmental domains overlapping with the context of the school. Specifically, incidents of student victimization were significantly higher in schools in which a large proportion of the student body reported peer delinquency.
- Structural aspects of the school environment emerged as significant predictors of student behaviour. Large schools (based on total student enrolment) were significantly less likely than smaller schools to experience student disciplinary referrals and incidents of student victimization.
- Between-school differences in student feelings of teacher support (sense of school membership) were largely predicted by favourable perceptions of school culture aggregated to the level of the school.

### **Implications for Policy and Program Development**

- Our results support interventions that attempt to strengthen interpersonal warmth and trust among students. Also recommended are policy changes aimed at de-emphasizing learning goal structures that focus on competition, social comparison, and ability, and changes that work toward the development of a well-integrated system of rewards for recognizing student achievement, effort, attendance, and participation in extra-curricular activities. Schools must take steps to ensure that school life is a rewarding experiencing for all young people by engaging those youth feeling marginalised or alienated from school life.
- Special programs may be required that protect or insulate youth from the potentially harmful effects of family environmental change, in particular, youth exposed to parental divorce or those repeatedly uprooted from their surroundings as a result of frequent school changes or family moves.
- Policies and programs that aim to effect change in the culture of the school must be interwoven with efforts focussing on the peer group, family, and broader community that promote greater participation by young people in structured community and after-school activities, more supportive family relationships, increased parental interest and involvement in children's education, and better parental monitoring of child activities.

## **ACKNOWLEDGEMENT**

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## BACKGROUND

Since the late 1970s, researchers and educators have become more aware of the social environment of the school as a powerful force shaping the developmental and learning outcomes of students. Michael Rutter's research on effective schools in Great Britain together with initiatives such as the Safe Schools and High School and Beyond studies conducted in the United States identified several social and normative aspects of environment conducive to positive academic and behavioural functioning. Positive student outcomes were more likely to occur in schools with a caring and committed faculty, fair and consistent expectations, rules, and disciplinary practices, a high degree of student involvement in school decision-making, many opportunities for learning, a heavy emphasis on academic pursuits, positive student behavioural norms and values (including a safe and orderly environment), and a strong community presence in school activities (Bryk & Thum, 1989; Edmonds, 1986; Gottfredson & Gottfredson, 1985; Harnisch, 1987; Lee & Bryk, 1989; Rutter, Maughan, Mortimore, Ouston, & Smith, 1979).

While research on effective schools provided program and policy makers with important information about the extent and nature of school environmental influences on student learning and behaviour, it performed rather poorly in answering the questions of "how" and "under what conditions" those influences occurred (Brook, Nomura, & Cohen, 1989; Maughan, 1988; Talbert & McLaughlin, 1999). This gap in knowledge represents a serious shortcoming of school environmental research since the development and implementation of effective prevention initiatives targeting the social and physical ecology of schools depends on an in-depth knowledge and understanding of the underlying mechanisms linking environmental attributes with psychological and behavioural outcomes and how those mechanisms differ for age and gender groups and those coming from varied social, economic, and cultural backgrounds (Felner, Brand, Adan et al, 1993).

One promising theoretical perspective that may shed light on these environmental processes conceptualizes schools as "potential communities" (Battistich & Hom, 1997; Battistich, Solomon, Kim, Watson, & Schaps, 1995; Goodenow, 1993a; Goodenow & Grady, 1993; Roeser, Midgley, & Urdan, 1996; Higgins-D'Alessandro & Sadh, 1997; Solomon, Watson, Battistich, Schaps, & Delucchi, 1996). Known hereafter as the Schools as Communities perspective, this perspective maintains that student academic and behavioural difficulties will be minimized in schools possessing a culture or ethos characterized by caring and supportive student and teacher relationships and student input into decisions pertaining to school policies and classroom instructional practices (student autonomy). Fewer difficulties are expected because exposure to democratic and supportive school cultures cultivates in students feelings of relatedness and belonging and attachment to school (a sense of school membership), a prerequisite for the acceptance and internalization of school-related goals and values (Solomon, Watson, Battistich, Schaps, & Delucchi, 1992). Recent applications of the theory have expanded the concept of school culture to include expectations for positive student body behavioural norms (e.g., perceptions of minimal cheating, drug use, theft), an emphasis placed by the school on academic pursuits, an emphasis on task-focussed learning goal structures (e.g., structures stressing improvement, understanding, and mastery of subject matter in the evaluation of student performance), and finally minimal emphasis on ability learning goal structures (e.g., structures stressing relative ability, social comparison and competition) (Higgins-D'Alessandro & Sadh, 1997; Roeser et al., 1996; Shouse, 1996).

Unfortunately, direct empirical support for the Schools as Communities perspective has been slow to emerge. A notable exception is Roeser and colleagues' middle school study of environmental correlates of student academic achievement (Roeser et al., 1996). Drawing from social cognitive theories of motivation, the authors expanded the concept of schools as communities by arguing that students attempt to derive meaning from their school experiences not only in terms of their needs for belonging and relatedness but through the adoption of learning goals in their quest for academic competency. Findings revealed that students who perceived a task-focussed learning goal structure at school (e.g., goals stressing student improvement, understanding and mastery of subject matter) adopted similar goals of their own and also felt a greater sense of school belonging. These variables in turn were positively associated with academic achievement both directly (school belonging only) and indirectly by fostering academic self-efficacy. Similar pathways were found for student perceptions of quality teacher/student relations.

A few studies have examined student sense of school membership either as an outcome of perceptions of school culture (Hagborg, 1994; Higgins-D'Alessandro, & Sath, 1997; Nelson, 1984; Solomon et al., 1992, 1996; Tanzer, 1989) or as a predictor of attitudinal and behavioural outcomes (Battistich et al., 1995; Finn, 1992; Goodenow, 1993a; Goodenow & Grady, 1993) and therefore offer a partial test of the Schools as Communities perspective. Several dimensions of school culture seem particularly important for building a strong personal sense of school membership. Perhaps the best documented of these influences is the quality of interpersonal relations among staff and students. Students who perceive trusting and supportive relationships at school tend to be the most satisfied with school life (Higgins-D'Alessandro & Sath, 1997; Isherwood & Hammah, 1981; Solomon et al., 1992, 1996; Tanzer, 1989) and are active participants in a variety of non-academic school activities (Higgins-D'Alessandro & Sath, 1997). Feelings of belonging and attachment are also enhanced in schools possessing task-focussed learning goal structures, fair and clearly defined rules, opportunities for learning (e.g., ready access to reading materials), and opportunities for student involvement in social activities (Catalano, Kosterman, Hawkins, Newcomb, & Abbott, 1996; Finn & Voelkl, 1993; Higgins-D'Alessandro & Sath, 1997; Nelson, 1984; Roeser et al., 1996). Finally, students view themselves as valued school members if they are engaged as active participants in formulating and implementing school policies and afforded autonomy in decisions pertaining to classroom instructional practices (Epstein, 1981, 1983; Solomon et al., 1992; Solomon et al., 1996).

Empirical evidence also links sense of school membership to several indicators of academic, social, and behavioural functioning. One critical component of membership is teacher and classmate social support. Students who perceive their own teachers as affectionate, sympathetic, involved, and dedicated project a positive self-esteem, are highly motivated academically, and participate frequently in classroom and extra-curricular activities (Finn, 1992, Goodenow, 1993a; Midgley, Feldlaufer, & Eccles, 1989; Skinner, Wellborn, & Connell, 1990; Skinner & Belmont, 1993; Voelkl, 1994). Perceived teacher support is also associated with fewer behavioural problems (i.e., school drop out, substance use) (Eggert & Herting, 1991; Rumberger, 1995), positive well being (Rigby, 2000), and strong academic performance through its association with involvement in extra-curricular school activities (Skinner, Wellborn, & Connell, 1990). Less is known about the influence of support derived from classmates. Goodenow (1993a), in her investigation of multiethnic junior high school students, found that perceived support from classmates operated along side teacher support and sense of belonging as a consistent (albeit less potent) predictor of academic expectations for success, academic motivation, and value attached

to school work. Other findings indicate that children who are accepted by their classmates exhibit fewer symptoms of social anxiety and depression than less popular youth (Ginsburg, La Greca, & Silverman, 1998; La Greca & Lopez, 1998) and are less likely to experience incidents of victimization (Rigby, 2000). A third component of membership consists of student feelings of attachment or bonding to school. Students who are committed to school tend to be actively engaged in school affairs and are less likely to become involved in serious delinquent activities (Jenkins, 1997; Sampson & Laub, 1993).

Not all students embrace school life with the same degree of enthusiasm and commitment. Girls more than boys tend to judge school culture in favourable terms and express a stronger sense of school belonging and attachment (Goodenow, 1993a, Goodenow & Grady, 1993; Hagborg, 1994; Higgins-D'Alessandro & Sath, 1997; Trusty Dooley-Dickey, 1993). According to Goodenow (1993a), because girls make greater emotional investments in relationships than boys, interpersonal dimensions of school environment are likely to have a stronger impact on their level of classroom participation and motivation for learning. Evidence pertaining to age is less straightforward. One study concluded that, while students may express feelings of alienation from school as early as grade four, negative manifestations in the form of reduced academic achievement do not appear until they reach grade eight (Trusty & Dooley-Dickey, 1993). Among high school students, evidence suggests that ninth and tenth graders are the most detached from school but that these feelings diminish with advancement to higher grades (McCreary Centre Society, 1999).

Finally, students differ in terms of academic ability and bring to their schools a social, economic, and cultural diversity that may impact on their academic experiences. Studies suggest that students from families low on socio-economic status and those belonging to certain cultural and linguistic minority groups tend to express feelings of disenchantment about school and therefore do not fully develop a strong sense of communal belonging and identity (Battistich et al., 1995). To some extent, these perceptual differences stem from a social or cultural “discontinuity” between the home and school environment. Low income families, for example, do not benefit as much from certain forms of human and social capital (e.g., parental post-secondary education, parental involvement in children’s education) that figure prominently in promoting children’s academic preparedness, motivation, and achievement. Moos notes that better-educated parents “mirror the academic style of school classrooms at home by praising and interacting with their child, modelling appropriate behaviour, and promoting initiative and independence”(Moos, 1987: 241). In contrast, parents with little or no education may feel a sense of exclusion from formal education and consequently transmit to their children attitudes toward learning that often conflict with the goals of the school (Comer, 1984). Consequently, students belonging to socially and economically disadvantaged families may gain the most from participating in highly supportive and caring school environments (Battistich et al., 1995; Brophy & Good, 1986; Peres & Pasternack, 1991).

## **STUDY GOALS AND OBJECTIVES**

Studies indicate that a strong sense of school membership serves an important protective function against a range of adolescent emotional and externalizing behavioural problems (Resnick, Bearman, Blum et al., 1997; Franke, 2000). Unfortunately, only a small percentage of students report feeling strongly connected to their school. In Canada, a report released by the McCreary Centre Society found that less than 10 percent of grade 9 and 10 students attending B.C. high schools reported a high level of school connectedness (defined as a strong sense of belonging and involvement) (McCreary Centre Society, 1999). While alarming, these findings underscore the need for studies that would identify those aspects of school culture that impede or enhance student engagement in school life as a step toward improving student mental health and academic and behavioural functioning.

Set within the broad confines of social ecological theory (see below), this study adopts the “Schools as Communities Perspective” to achieve a better understanding of the extent to which various aspects of school culture (and to a lesser extent, structural and physical attributes) contribute to a strong sense of school membership among students and the impact of a strong sense of school membership on student academic and behavioural functioning. Specific objectives are:

- To describe the prevalence and nature of student perceptions of school culture and individual feelings of sense of school membership and to relate those perceptions and feelings to academic, social, and behavioural functioning;
- To identify key aspects of school culture that contribute to student sense of school membership and how feelings of membership, in turn, are related to enhancements in academic, social, and behavioural functioning; and
- To assess whether the pathways linking aspects of school culture with student sense of school membership and other psycho-social outcomes are similar for individuals belonging to different demographic and family backgrounds.

## **THEORETICAL FRAMEWORK**

A social ecological perspective views the environment as the primary source of influence on the development of adolescent problem behaviour. Specifically, individual attitudes, feelings, and subjective states are seen as adaptations to environmental conditions that serve to mediate the effects of those conditions on behaviour. Environmental conditions may be either social or physical in nature and originate from several overlapping contexts, most often the family, peer group, school, and community. Felner and colleagues contend that analytic strategies that attempt to address the contexts in which behavioural problems develop (in addition to those that focus on changing individuals) are essential for developing prevention programs that possess high levels of efficacy. The authors call for an “ecological” analysis of the prevailing risk and protective factors that encompass both the characteristics of the persons in the settings as well as the key conditions in their environments (Felner, Silverman, & Adix, 1991).

To conduct this ecological analysis, we subscribe to a theory of student engagement in school life that borrows heavily from the Schools as Communities perspective (Solomon et al., 1992). According to this approach, students are likely to experience fewer academic and behavioural difficulties if they are exposed to school cultures defined by warm and supportive faculty and student relations and a democratic atmosphere where students are engaged as active participants in school decision-making. Fewer problems are expected because supportive school cultures instill in students a sense of school membership based on personal feelings of communal acceptance and belonging and a bonding or attachment to school life. Likewise, cultures that allow for student input in the formulation of school policies and classroom rules enhance feelings of membership because students realize that they are valued members of the school community. Students who view themselves as valued members of a caring and supportive school community are hypothesized to accept the goals and values of the school resulting in stronger academic performance and reduced behavioural problems. Aspects of school culture in this framework are consistent with Taguiri's definition of school culture as "the norms, values, and meaning systems" shared by staff and students (Taguiri, 1968). Emphasis is placed on the psychological environment of the school as perceived by students and how these perceptions influence their attitudes and behaviour. Thus, it is students' perceptions of the school culture and their reaction to those perceptions that are of importance (Maehr, 1991).

As noted above, recent applications of the Schools as Communities perspective (Higgins-D'Alessandro & Sath, 1997; Roeser et al., 1996) have expanded the concept of school culture to include perceived learning goal structures. Roeser and colleagues conclude that students are not only cognisant of the interpersonal aspects comprising the social context of their school but the environmental norms that define successful learning. They suggest that school practices and policies that stress relative ability, social comparison, and competition in the evaluation of student performance (ability-focussed learning goal structures) can have a detrimental impact on student feelings of acceptance and belonging because it diminishes student perceptions that schools value them as individuals. In contrast, school practices that emphasize student improvement, mastery, and understanding of subject matter (task-focussed learning goal structures) are believed to enhance feelings of belonging because they are grounded on the premise that all students are capable of learning.

Others have added to the concept of school culture, student perceptions of the behavioural norms of fellow students. Higgins-D'Alessandro & Sath (1997) found that students who held positive expectations of the behavioural norms of students at school (e.g., at this school there is very little cheating) expressed a greater satisfaction with school life and were more inclined than others to participate in extra-curricular activities. Sense of school membership may also be enhanced among schools possessing a strong emphasis on academic pursuits (or academic press). According to Shouse (1996), a strong academic press conveys a message to school staff and students that learning really matters and infuses school activities with meaning and purpose. Finally, although not directly tested within the Schools as Communities perspective, it is reasonable to assume that personal feelings of school membership will also be influenced by student perceptions of the fairness and clarity of school rules and disciplinary practices (Nelson, 1984) and the level of parental involvement in school affairs (Belenardo, 2001).

Several mechanisms possibly account for the observed beneficial impact of feelings of school membership on student mental health and behavioural functioning. Studies carried out following the Schools as Communities perspective have found a strong connection between feelings of

membership and student self-esteem, sense of academic self-efficacy, academic motivation, and a broad array of measures tapping student pro-social skills, values, and concerns (Solomon et al., 1996). Yet no attempt has been made to link these latter variables to hard behavioural outcomes within a single model (for example, by positioning self-esteem or self-efficacy between sense of school membership and behaviour). Empirical evidence suggests that students lacking in these qualities (i.e., low self-esteem, self-efficacy, etc.) are at risk for poor mental health, academic underachievement, and involvement in risky or harmful behaviours (Alves-Martins, Peixoto, Gouveia-Pereira, Amaral, & Pedro, 2002; Bolognini, Plancherel, Bettschart, & Halfon, 1996; Dukes & Lorch, 1989; Scheier & Botvin, 1998; Vega, Apospori, Gil, Zimmerman & Warheit, 1996).

Figure One depicts the Schools as Communities model. School culture is conceptualized as a multifaceted construct, thereby allowing for a formal test of those aspects of culture that are most salient for instilling in students a strong sense of school membership. Aspects of school culture are grouped conceptually under four dimensions. These include a favourable social atmosphere (defined by warm and respectful teacher/student relationships and student relations marked by trust and mutual respect), school learning goals emphasizing academics and task-focussed goal structures, positive student body behavioural norms (e.g., minimal cheating, drug use, theft), and fair and democratic governance practices (e.g., student input into school decision-making, fair and clearly defined school rules and disciplinary practices, parental involvement in school affairs). Sense of school membership is also a multifaceted construct consisting of feelings of acceptance, belonging, and support from teachers and classmates, involvement in extra curricular school activities, and a commitment or bonding to school. A central premise of the model is that school culture, per se, does not have a direct influence on student academic and behavioural functioning. Instead, young people exposed to a favourable culture are hypothesized to develop a strong sense of school membership. A strong sense of school membership in turn is believed to reduce the likelihood of academic and behavioural problems both directly and indirectly by increasing self-esteem, academic self-efficacy and motivation, and pro-social skills and values.

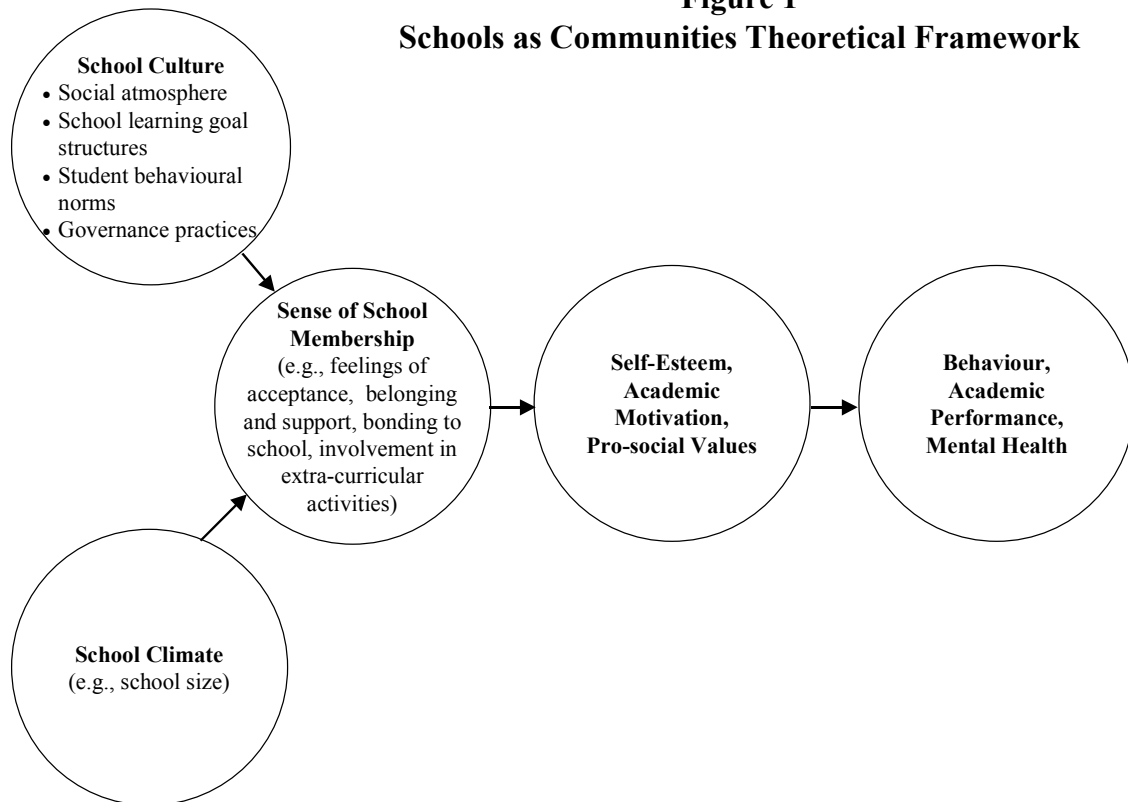
In addition to the interpersonal and normative features of school culture, evidence suggests that student sense of school membership may be influenced by several tangible environmental characteristics typically referred to as “school climate”.<sup>1</sup> These include factors such as organizational size, school governance (e.g., public vs. separate school sectors), school resources, and the demographic and socio-economic composition of students and teaching staff (Bryk et al., 1990; Finn & Voelkl, 1993; Firestone & Rosenblum, 1988; Gottfredson & Gottfredson, 1985; McNeal, 1997; Rumberger, 1995). Large schools, for example, are thought to inhibit student ability to form attachments to the school environment because they tend to be more bureaucratic with a high degree of role specialization and formal communication links. Wehlage and colleagues hypothesize that American Catholic schools may be more effective in

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<sup>1</sup>The term “school climate” is reserved for the more or less tangible environmental characteristics such as organizational structure and size, formal policies and operating procedures, student and teacher demographics, and physical appearance (Tagiuri, 1968). Because assumptions, values, and norms commonly shared in an organization can shape members’ perceptions, feelings, and behaviour (Gaziel, 1997), many believe that school culture is that aspect of school environment that educators can actually change or improve. In other words, school culture (and not climate) may be most amenable to manipulation through experimental intervention programs. Indeed, evidence suggests that while both a positive school climate and culture are equally important for maintaining a high level of student academic performance, only culture seems to influence student’s desire to remain in school as well as participate in non-academic school activities (Higgins-D’Alessandro & Sath, 1997).

achieving positive learning outcomes than public schools because they tend to be smaller and less bureaucratic and possess a culture that is more broadly supportive of those who attend (Wehlage, Rutter, Smith, Lesko, & Fernandez, 1989). Unfortunately, evidence supporting many of these hypothesized relationships has remained sketchy largely because weak feelings of school membership are inferred from incidents of truancy and school disorder and not measured directly as a mechanism linking school characteristics with student behavioural outcomes.

**Figure 1**  
**Schools as Communities Theoretical Framework**



Not shown in Figure One are a number of model controls deemed as important correlates of student perceptions of school culture and sense of school membership. Because many of these factors are also related to student academic and behavioural problems, it becomes necessary to control statistically for their influence. Prior research suggests that girls tend to express more favourable impressions of school environment than boys (Goodenow, 1993a; Hagborg, 1994), perform better academically, and are less inclined to engage in violent and delinquent behaviour (Jenkins, 1997). Age is an important control insofar as early adolescence is a period of rapid developmental change both physically (with the onset of puberty) and psychologically as peers take on new significance as a reference group in defining individual perceptions of self-worth. These changes may serve to explain why feelings of detachment from school grow stronger when students enter their high school years as well as the frequent occurrence of delinquent behaviour observed among older students.

Other potential confounds are rooted in environmental domains overlapping with the culture of the school. Students immersed in delinquent peer groups and those from unstable and impoverished family backgrounds tend to express negative views of their school environment

(Battistich et al., 1995; Jenkins, 1997) and possess weak attachments/bonds to learning and school-related goals (Jenkins, 1997). Not surprisingly, these groups do not perform as well academically and are at greater risk of experiencing a variety of behavioural problems (Jenkins, 1997; Sampson & Laub, 1993). Family environments that are emotionally unsupportive and lacking in cognitive stimulation have also been proven to be potent predictors of academic and behavioural problems among school-age children independent of the effects of poverty status (Dubow & Ippolito, 1994; Isherwood & Hammah, 1981; Jenkins, 1997). Finally, neighbourhood conditions such as poverty, crime, and residential instability may influence school disorder through the development of anti-achievement attitudes, the adoption of norms advocating violence as a means to resolve disputes, and by weakening community social controls over child behaviour (Hagan, MacMillan, & Wheaton, 1996; Welsh, Greene, & Jenkins, 1999). Research indicates that young people residing in socially cohesive and low crime neighbourhoods report a strong commitment toward school and minimal involvement in delinquent activities (Catalano et al., 1996; Elliott, Wilson, Huizinga, Sampson, Elliott, & Rankin, 1996; Gottfredson & Gottfredson, 1985; Hellman & Beaton, 1986; Simcha-Fagan, & Schwartz, 1986; Stiffman, Hadley-Ives, Elze, Johnson, & Dore, 1999).

## METHOD

### Target Group

The focus of the report is on students entering their high school years. Early adolescence is a period marked by normative declines in several indicators of school adjustment. Course grades typically fall and attachment to school, academic motivation and perceptions of academic self-efficacy grow more negative (Maehr, 1991; Mouton, Hawkins, McPherson, & Copley, 1996; Roeser et al., 1996; Trusty & Dooley-Dickey, 1993). These adjustment difficulties may be attributed to a number of developmental changes, most notably a heightened sense of self-awareness or self-consciousness and an increase in the importance attached to one's peers in defining individual self-worth (Goodenow, 1993a; Goodenow & Grady, 1993). However, evidence suggests that secondary school environments (more so than elementary school environments) possess features that fall short of meeting the developmental needs of young people and therefore may be counterproductive to successful learning and positive behavioural adjustment (Eccles, Midgley, Wigfield et al., 1993; Midgley, Anderman, & Hicks, 1995; Roeser et al., 1996).<sup>2</sup>

### Study Design

This study adopted a nested cohort longitudinal design with students nested within schools and schools nested within local neighbourhoods. A total of 22 schools from 11 Ontario school board

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<sup>2</sup>Secondary schools, it is argued, tend to assess student performance on the basis of learning goal structures that emphasize competition, social comparison, and relative ability at a time when young people are sensitive about how they are viewed by their peers. They also provide for less involvement in classroom decision-making when the desire for independence and autonomy is growing (Eccles et al., 1993). Large student bodies characteristic of most secondary schools combined with a learning environment that occurs in multiple classroom settings also means less attention to individual student needs and a reduced likelihood of students forging close supportive ties with teachers (Goodenow, 1993a).

districts participated, resulting in a non-random (convenience) sample of 2,403 grade 9 students.<sup>3</sup> The target sample (number of grade 9 students attending all schools) totalled 3,265 students. Individual- and school-level data were collected on three occasions: November/December of 1999, May/June of 2000, and November/December of 2000 to January/February of 2001 (when students were enrolled in grade 10). The results of this report are based on 22 schools with complete information participating in the fall 1999 data collection.

## **Procedures**

Ethical approval for this study was granted in April of 1999. In the spring and early fall of 1999 community program consultants from the Centre for Addiction and Mental Health (CAMH) approached local school board officials to gauge interest in the study. Following board consent, consultants met with interested school principals and a memorandum of understanding was signed broadly outlining each party's roles and responsibilities. Two weeks prior to the questionnaire administration dates, a letter describing the study (including procedures for maintaining confidentiality) was prepared by the principal investigator and distributed to all grade 9 students and teachers (see Appendix A). Study information was also distributed in the form of advertisements posted on school bulletin boards. To encourage participation, students were informed of their eligibility to win three prizes at the conclusion of the study valued at \$25-\$50. In most schools, a letter soliciting parental consent for student participation was printed on school letterhead and mailed to parents with instructions to return the completed form (signed and dated) to the school in the event that they did not wish to have their child participate in the study. Consent forms included a description of the overall purpose of the study, sample questions asked of students, assurances of confidentiality, and the provision of incentives. In five schools, board policy required active parental consent. Parents were instructed to sign and date the form and return it to the school regardless of their decision to accept or refuse their child's participation (see Appendix B).

CAMH program consultants and non-CAMH personnel from each community (typically health care or other social service professionals) supervised the administration and collection of the student and school climate rater questionnaires (described in detail below). In general, administration of the student questionnaires occurred in classroom settings. However, in a small number of schools, questionnaires were administered to students in the cafeteria, library, or gymnasium. Student questionnaires consisted of two sections (each section containing 8 pages) administered on two separate occasions during the same week. This two-stage procedure was conducted to avoid participant exhaustion/frustration with a lengthy questionnaire. Seventy-minute periods were allotted for students to complete each section. The average completion time for each section was 40 minutes.

At the beginning of the student questionnaire administration, CAMH consultants introduced the general purpose of the study. Students were informed that their participation was voluntary and that they were free to skip questions they did not wish to answer. To maintain confidentiality, teachers were asked to remain at the front of the room until the end of the school period. Students were also given assurances that school personnel would not see their answers. Students

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<sup>3</sup>Due to the loss of a shipment of questionnaires from the fall baseline survey, data for one school was not included in this report. This reduced the target sample size at baseline from 3,489 to 3,265. The omitted school will be included in future reports involving the second and third waves of data collection.

were instructed not to record their name on the questionnaires. Questionnaire sections were linked through a series of unique identifiers including student sex, exact birth date (day and month), telephone number (last four digits), and first and last initials. Completed questionnaires were sealed in envelopes and delivered by courier to the principal investigator of research in London, Ontario. Students refusing to participate or without parental permission were asked to remain seated and do homework. Arrangements were made for students absent on either administration date to complete the questionnaire at another time.

In order to assess the physical context of schools (i.e., school climate vs. school culture), school climate rater questionnaires were completed independently by two raters (CAMH program consultants or assistants) usually on the same day and immediately following the completion of the student questionnaires. Raters were instructed to observe and rate (without the assistance of school staff) objective aspects of the social and physical climate of each school (both interior and exterior settings). Brief interviews were conducted with school principals to collect information not considered readily observable (e.g., school policy on drug use or conduct). The average completion time was 45 minutes. Completed questionnaires were sealed in envelopes and delivered by courier to the principal investigator of research in London, Ontario.

## MEASURES

Data for this study were collected from three sources. These included student self-reports of environmental attributes and individual feelings, attitudes, and behaviours; ethnographic and environmental assessments/ratings of school climate obtained from two independent school raters aggregated at the level of the school, and a demographic and socio-economic profile of each school catchment area population. Catchment area characteristics were obtained from 1996 Canadian population census tracts.

### Student Self-Reports

The student self-report questionnaire asked participants to provide detailed impressions or perceptions of their school, family, and neighbourhood environments as well as information pertaining to their feelings, attitudes, and behaviours and demographic and socio-economic background. Measures were selected on the basis of demonstrated reliability and validity, developmental appropriateness, and extensive use in diverse population settings including gender and ethnic/racial minority groups. Internal consistency reliability (based on Cronbach's alpha) and principal components analysis was performed on all scale items. Items were retained on a factor if the corresponding loadings reached a value of .40 or higher. The purpose of this data step was to evaluate scale reliability (the notion that a set of indicators is measuring one construct only) and to guide the selection of indicators deemed appropriate for the measurement component of the structural equation models (i.e., indicators with moderate to high factor loadings) (see section on analytic techniques).<sup>4</sup>

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<sup>4</sup> Factor loading coefficients are used to determine if there is a significant relationship between individual indicators and the underlying construct or factor. The higher the coefficient, the more the indicator is a pure measure of the factor.

### *Independent or Predictor Variables*

School culture is viewed as the “objective” perception of the social and organizational features of a school or the average or shared perception of students. Items were therefore phrased with a general reference (e.g., “teachers at this school enjoy talking with students”) rather than a personal reference (e.g., with me). Although several elements of school culture may contribute to student feelings of sense of school membership, we focus on three broad areas: the social environment of the school, the learning goal structures of the school, and student body behavioural norms. Excluded are measures of school governance practices, specifically, student participation or involvement in classroom and school decision-making, fairness/clarity of school rules and disciplinary practices, and parental involvement in school affairs.

The social environment of the school consists of the quality of relationships between teachers and students and the quality of relationships among students. Quality of student/teacher relationships was measured using a five-item scale from the school relationship sub-dimension of the Patterns of Adaptive Learning Survey (Roeser et al., 1996). The scale was designed to capture the degree of support, trust, and respect in teacher/student relations (e.g., at this school teachers treat students with respect;  $\alpha=.84$ ). Five-point response categories ranged from “not at all true” to “very true”. Quality of student relationships was measured using the relationship sub-dimension of the School Culture Scale (Higgins-D’Alessandro & Sadh, 1997). This four item scale purportedly taps the level of mutual support, trust, and respect among students (e.g., at this school students trust each other;  $\alpha=.83$ ). Five-point response categories ranged from “strongly disagree” to “strongly agree”. Factor analysis of each of the social relationship scales supported single factor structures.

The goal structure of the school consists of three components: school conformity to task-focussed learning goal structures, school conformity to ability-focussed learning goal structures, and the degree of academic emphasis or orientation. School task and ability goal structures were measured using two sub-dimensions of the Patterns of Adaptive Learning Survey (Roeser et al., 1996). The school task sub-dimension consisted of 6 items purportedly tapping the degree to which a school emphasizes improvement, mastery, and intellectual development in student learning (e.g., at this school teachers believe all students can learn;  $\alpha=.78$ ). The school ability sub-dimension consisted of five items tapping school emphasis on social comparison, relative ability, and competition among students (e.g., at this school only a few kids get praised for their work;  $\alpha=.83$ ). Both goal structure scales contained five-point response categories ranging from “not at all true” to “very true”. Factor analysis of the goal structure scales supported single factor structures. Academic orientation of the school consisted of 6 items from a survey of school climate (Sackney, 1988). Five-point response categories ranged from “strongly disagree” to “strongly agree”. Factor analysis of the scale resulted in a two-factor solution. Items with high loadings on factor one appeared to reflect the degree to which students themselves were academically oriented (e.g., at this school students are motivated to learn;  $\alpha=.81$ ) while items on factor two appeared to reflect the importance placed by the school on academics (e.g., grades are very important at this school;  $\alpha=.54$ ).

Student behavioural norms was measured using the normative expectations sub-scale of the School Culture Scale (Higgins-D’Alessandro & Sadh, 1997). This 7-item scale purportedly taps normative expectations about student behaviours such as cheating, fighting, etc. (e.g., at this school there is very little physical fighting;  $\alpha=.84$ ). Five-point response categories range

from “strongly disagree” to “strongly agree”. Factor analysis of scale items supported a single factor structure.

### *Mediating Variables*

Constructs defined as mediators in our study included student sense of school membership and self-esteem<sup>5</sup>. Sense of school membership was measured on the basis of 6 indicators: individual student perceptions of teacher and classmate support, feelings of acceptance and respect and inclusion in activities, feelings of acceptance and respect from teachers, general feelings of acceptance and belonging, and level of involvement in extra-curricular school activities.

Perceived teacher support was measured using the teacher support sub-scale of the Social Support Appraisals Scale (6 items,  $\alpha=.76$ ) (e.g., do you think your teachers care about you?) (Dubow & Ullman, 1989). Factor analysis of the scale supported a single factor structure. Five-point response categories ranged from “never” to “always”. Perceived classmate support was measured using a subset of five items from the peer support sub-scale of the Social Support Appraisals Scale (Dubow & Ullman, 1989). Factor analysis of the scale revealed a two-factor solution. Three of the five items loaded highly on factor one (e.g., do you feel like you don’t belong in your classes?  $\alpha=.77$ ) and explained 49 percent of the variance in the underlying correlation matrix. These items were retained in the analysis. Five-point response categories ranged from “never” to “always”.

Additional indicators of membership were measured using the Psychological Sense of School Membership Scale (PSSM) (Goodenow, 1993b). The PSSM is an 18-item scale designed for use in adolescent populations. Scale items (containing a five-point response format) are intended to capture perceived liking, personal acceptance/belonging, and inclusion in school activities as well as respect and encouragement for participation. Factor analysis of the PSSM identified three distinct dimensions: feelings of acceptance, respect, and inclusion in activities (6 items–e.g., other students in this school take my opinions seriously;  $\alpha=.77$ ), feelings of acceptance and respect from teachers (4 items–e.g., teachers here are not interested in people like me;  $\alpha=.73$ ), and feelings of general acceptance and belonging (3 items–e.g., it’s hard for people like me to be accepted here;  $\alpha=.81$ ).

Level of involvement in extra-curricular school activities (excluding sports) was assessed using four items measuring frequency of involvement in the past 4 weeks (e.g., school clubs, student council or government;  $\alpha=.49$ ). Four-point response categories ranged from “never” to “once a week or more”. Factor analysis of the scale items supported a single factor structure.

Self-esteem was selected as a measure of student affect hypothesized to mediate the relationship between sense of school membership and student academic and behavioural/mental health outcomes. Previous empirical literature suggests that enhanced feelings of self-esteem result among students who report strong feelings of acceptance and belonging at school (Solomon et al., 1992). Moreover, a wealth of evidence indicates that negative feelings of self-esteem are a risk factor for poor academic performance, mental health problems, and delinquent activities. Self-esteem was measured using a subset of items from the Rosenberg Self-Esteem Scale (Bagley, Bolitho, & Bertrand, 1997) (5 items–e.g., at times I think I am no good at all; I wish I

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<sup>5</sup> A mediator is a variable that is temporally positioned between an independent variable and an outcome variable. It is statistically related to both variables.

could have more respect for myself;  $\alpha=.85$ ). Five-point response categories ranged from “strongly agree” to “strongly disagree”. Factor analysis of the original 10-item scale generated two “method” factors, one comprised of negatively worded items (factor one) and the other positively worded items (factor two). Only items corresponding to factor one were retained in this study.

### *Outcome Variables*

Outcome variables in our model included student substance use, alcohol abuse, thrill-seeking, externalizing behavioural disorders (conduct disorder, oppositional disorder, and attention deficit/hyperactivity), internalizing behavioural disorders (depression and social anxiety), victimization, school disciplinary referrals, school conduct problems, truancy, and academic performance.

Substance use was measured on the basis of four questions each having a 6-week reference period. These included number of cigarettes smoked (6 response categories ranging from never smoked in life time to smoked more than a half a pack daily), frequency of using alcohol (8 response categories ranging from never drank alcohol in lifetime to drank more than once each day), frequency of using marijuana (four response categories ranging from “none” to “three or more times”), and frequency of using illicit drugs other than marijuana (e.g., crack/cocaine, LSD, speed) (four response categories ranging from “none” to “three or more times”). Because of the small number of students in our baseline sample reporting use of hard drugs, marijuana and other illicit drugs were combined into a single index of illicit substance use. Factor and reliability analysis of the three substance use measures (alcohol, cigarette, and illicit drug use) indicated a single factor structure and good internal consistency ( $\alpha=.77$ ).

Alcohol abuse was measured using items from the Alcohol Misuse Scale (Dielman et al., 1989). Respondents reported the number of times in the past 6 weeks they participated in harmful drinking behaviour or experienced the effects of excessive consumption (4 items—e.g., number of times respondent drank more than planned to; number of times felt sick to stomach after drinking alcohol;  $\alpha=.86$ ). Response categories ranged from “none” to “three or more times”. Factor analysis supported a single factor structure.

Thrill-seeking was measured on the basis of five items selected from an adolescent thrill-seeking scale (e.g., I get a real kick out of doing things that are a little dangerous;  $\alpha=.85$ ) (Wood, Cochran, Pfefferbaum, & Arneklev, 1995). Items were measured on a five-point likert type scale ranging from “strong disagree” to “strongly agree”.

Externalizing behavioural disorders were assessed according to DSM-III-R symptom checklists of child/adolescent disorders (Boyle, Offord, Racine, Fleming, Szatmari, & Sanford, 1993). For each disorder, symptoms were measured using a series of negatively worded items or statements with three-point response categories (never/not true, sometimes/somewhat true, and often/very true). Disorders included: conduct disorder (12 items—e.g., is mean to others, steals things at home;  $\alpha=.85$ ), oppositional disorder (9 items—e.g., argues a lot with adults, blames others for his/her mistakes;  $\alpha=.82$ ), and attention deficit/hyperactivity (14 items—e.g., can’t concentrate and pay attention for long, can’t stay seated when required;  $\alpha=.86$ ). Factor analysis of the conduct disorder and oppositional disorder items supported single factor structures. Factor analysis of items pertaining to attention deficit/hyperactivity resulted in a two-factor solution.

Factor one explained 36 percent of the variance in the underlying correlation matrix while factor two explained only 7 percent. Based on strong theoretical considerations, we chose to retain all 14 items on the same scale.

Internalizing behavioural disorders included depression and social anxiety. Depression was measured using the children's version of the Centre for Epidemiology Studies Depression Scale (CES-D) (Radloff, 1977; Weissman, Orvaschel, & Padian, 1980). The CES-D contains 18 items with five-point response categories ranging from "strongly agree" to "strongly disagree". Factor analyses of the CES-D items indicated two underlying dimensions: psychological symptoms (7 items—e.g., felt down and unhappy this week, felt lonely, like I didn't have any friends;  $\alpha=.89$ ) and physiological symptoms (7 items—e.g., did not feel like eating, felt too tired to do things;  $\alpha=.80$ ). Social anxiety was measured using three sub-dimensions of the revised Social Anxiety Scale for Children (SASC-R) (La Greca & Stone, 1993). Items were rated on a five-point scale ranging from "not at all" to "all of the time". Our analysis of the SASC-R supported a three-factor model (similar to the authors' findings) consisting of: fear of negative evaluation from one's peers (8 items—e.g., worries about being teased, afraid other kids will not like him/her;  $\alpha=.93$ ), social avoidance and distress specific to new situations (4 items—e.g., nervous when talks to new group of kids, nervous when talks to kids doesn't know very well;  $\alpha=.90$ ), and generalized social avoidance and distress (3 items—e.g., quiet when with a group of kids, afraid to invite others to house because they might say no;  $\alpha=.80$ ).

School victimization was measured using four items from the School Violence Victimization Index (SVVI) (Rosenblatt & Furlong, 1997). The SVVI contains statements capturing the frequency of student experiences of victimization at school (e.g., someone threatened to hurt you;  $\alpha=.78$ ). Scale items are rated using five-point response categories ranging from "not at all" to "all of the time". Factor analyses of the scale items supported a single factor structure.

Truancy was represented by two indicators: number of times in the past 6 weeks student skipped classes and number of times in the past 6 weeks student missed days of school without the permission of the school or parents (6 response categories ranging from "none" to "more than 10 times"). Truancy was treated as a proxy measure for dropping out of school in light of evidence which suggests that dropping out is not a spontaneous decision but rather the end result of a gradual drifting away from school work as the focus of day-to-day activities (Bryk & Thum, 1989).

School disciplinary action consisted of two items: number of times in the past 6 weeks student was sent to the principal or vice-principal for his/her own misbehaviour and given an in-school detention for his/her own misbehaviour (6 response categories ranging from "none" to "more than 10 times"). School conduct problems (Boyle et al., 1993) was measured on the basis of three questions asking respondents to report on the frequency of in-school misconduct in the past 6 months: frequency of disobeying at school, frequency of cutting classes/skipping school, and frequency of vandalizing school or other property ( $\alpha=.69$ ). Response categories were "never/not true", "sometimes/somewhat true", and "often/very true".

Academic achievement was measured according to student perceptions of their past 6 week level of performance in four subject areas: math, science, English, and social sciences (e.g., history, geography, social studies) (five response categories ranging from "not too well/poorly" to "very well/excellent"). A subjective rating of performance was obtained by combining student

responses from each subject area into a single index. Students were also asked to provide an overall assessment of their performance across all subject areas (e.g., does student mostly get A's, B's, etc.).

### *Study Controls*

Study controls were selected on the basis of our review of prior literature and included student demographics, family socio-economic status, indicators of family functioning, peer delinquency, and level of involvement in community activities. Controls pertaining to family socio-economic background included number of siblings, employment status of parents in the past 6 months (both parents unemployed, father only, mother only, both parents employed), educational attainment of mother and father, and dwelling status (rent vs. own). Demographic controls included student age, gender, living arrangements (lives with both natural parents versus other arrangements), number of times family changed residence in the past 5 years, number of times student changed schools in the past 5 years, and length of time (in years) in current residence. We constructed a single index of family socio-economic status based on the following recoded items: parental education—father and mother (some high school or less vs. other), employment status (both parents unemployed vs. other), dwelling status (rent vs. own dwelling), and four or more siblings. Factor analysis results supported a single factor structure ( $\alpha=.44$ ). Selected demographic variables were also recoded into dichotomous categories to arrive at a single measure of family stability. Variables included: living arrangements (single-parent household vs. other arrangement), length of time in current residence (less than two years vs. other), school changes (3 or more times vs. other), and family residential mobility (3 or more times vs. other). Factor analysis of the recoded variables supported a single factor structure ( $\alpha=.61$ ).

Family environment was assessed according to an index of family stability (defined above), student perceptions of family social support, perceptions of parental autonomy support, parent/guardian monitoring of child activities, and parent/guardian interest/involvement in child's education. Family support was measured using the Family Support sub-scale of the Social Support Appraisals Scale (Dubow & Ullman, 1989). The sub-scale consisted of 6 items with five-point response categories ranging from "never" to "always" (e.g., do you think your family cares about you?  $\alpha=.86$ ). Parental autonomy support consisted of a five-item scale designed to capture the extent to which parents support their children's autonomy (Grolnick, Ryan, & Deci, 1991). Items contained five-point response categories ranging from 'strongly agree' to 'strongly disagree' (e.g., my parents help me choose my own direction;  $\alpha=.84$ ). Parental monitoring of child activities was assessed using three items consisting of three-point response categories ranging from "never" to "always" (e.g., my parents/guardians know where I am when I am away from home;  $\alpha=.79$ ). Parental interest/involvement in child's education was assessed using three items consisting of five-point response categories ranging from "strongly disagree" to "strongly agree" (e.g., my parents would be disappointed if I brought home a bad report card;  $\alpha=.47$ ). Factor analysis of each of the family environment scales supported a single factor structure. For each scale, items were summed to arrive at a single index.

Peer delinquency was assessed on the basis of 8 items adapted from questions pertaining to youth behavioural problems (Adlaf, Ivis, & Smart, 1997) (e.g., number of times in the past 6 months respondent's close friends: banged up or damaged on purpose something belonging to someone else;  $\alpha=.85$ ). Three-point response categories ranged from "never" to "two or more times". Involvement in structured out of school community activities was assessed using four

items measuring frequency of involvement in the past four weeks (e.g., lessons in art, dance, music, youth organizations;  $\alpha=.54$ ). Four-point response categories ranged from “never” to “once a week or more”. Factor analysis of the peer and community scales supported single factor structures.

### **Environmental and Ethnographic Ratings/Assessments**

Information on the demographic and structural characteristics of participating schools was gathered through consultations with school administrative staff. Characteristics included school size (number of students attending), number of teachers (all grade levels), number of grade 9 students, number of grade 9 teachers, proportion of teachers with a masters degree or higher (all grade levels), age and gender distribution of teachers (all grade levels), and estimates of the demographic and socio-economic profile of the total student body. A student/teacher ratio was derived by dividing the total student population by the total number of teaching staff. Schools were also grouped according to size (<500, 500-999, and 1000 plus), provincial region (north, central, and south west), ethno/linguistic status (Anglophone vs. Francophone), and governance structure (separate vs. public sectors).

In each school, two individuals (raters) independently completed a school rater questionnaire, usually on the same day. Ethnographic and environmental ratings were generally made on a five-point scale with response categories ranging from “not at all true” to “very true”. Using this scale, raters indicated the extent to which various aspects of school climate were present. Constructs included: appearance/condition of school grounds and building exterior, appearance/condition of the building interior (including washrooms and classrooms), school crowding, teacher monitoring/supervision of students, student/teacher rapport during class changes, level of community involvement (e.g., guest lecturers from the community), presence/display of school policies (e.g., policy on drug use), appreciation and recognition of student contributions and achievements (e.g., school work is displayed, honour rolls, awards/prizes), advertisements/displays for school activities (e.g., school clubs, school events), presence of student media (e.g., newspaper, yearbook), and availability of resources (e.g., library, gymnasium). For constructs in which information was not readily observable (e.g., school policies), raters were encouraged to interview school staff.

We collapsed ratings for items belonging to each construct into two categories: a rating of “true or very true” vs. all others.<sup>6</sup> Positive ratings were then assigned a value of one and counted to provide an overall summary measure. This was done “within rater” resulting in two count variables for each construct. As a final step, Pearson correlation coefficients were generated relating the construct scores of Rater One with those of Rater Two. Moderate to strong correlations (statistically significant coefficients exceeding .40) were found for six constructs: appearance/condition of school building exterior/grounds ( $r=.53$ ), appearance/condition of school interior ( $r=.60$ ), crowding ( $r=.45$ ), school appreciation and recognition of student achievement ( $r=.76$ ), school promotion of student activities/media through advertising/displays ( $r=.88$ ), and

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<sup>6</sup> To assess the level of agreement between raters, inter-rater reliabilities were initially calculated for each set of construct items using the intra-class correlation coefficient (ICC) (Ottenbacher & Tomchek, 1993). The ICC was chosen over other methods (e.g., Kappa Statistic) given its adjustment for chance agreement between raters and the ordinal nature of the response categories. Unfortunately, ICC values were quite poor for a number of constructs falling below a value of .60. Only two constructs had ICC values above .80, generally considered to be the minimum requirement for achieving good reliability.

social climate (student/teacher relations) ( $r=.53$ ). Scores on these constructs were averaged across raters and included in our multilevel modelling procedures (see section on multilevel modelling).

### **School Catchment Area Information**

Currently, the province of Ontario lacks a standardized database containing demographic and socio-economic information on secondary school catchment area populations. As a result, participating schools in our study were mapped onto provincial census tracts contained in the 1996 Canadian population census (Statistics Canada, 1999). Based on 20 percent sample data, census tract information was collected for each school community for inclusion in our multilevel modelling procedures. Included was the proportion of the population classified as renters, total unemployment rate, proportion of the population age 15 and over with less than high school education, proportion with family incomes less than \$30,000 (among all families), proportion of single-parent families (among all families), proportion of population age 5 and over that changed residence in the past 5 years, and proportion of population with a mother tongue other than French or English.

## **ANALYSIS PLAN<sup>7</sup>**

### **Structural Equation Modelling**

Structural equation modelling (SEM) employing the Amos software program (Arbuckle, 1995) was used to evaluate the performance of individual sense of school membership as a mechanism mediating the relationship between student perceptions of school culture and academic and behavioural functioning. SEM has two main components: a measurement model, which defines one or more latent unobserved constructs in terms of a set of measured indicators, and a structural model which specifies a set of causal relationships between the constructs. Maximum likelihood methods of estimation (MLE) were used to estimate the entire set of parameters in the model simultaneously, including the loadings of each of the measured indicators on their respective factors, the error terms of each indicator, the relationships between the exogenous and endogenous variables, and finally the disturbances of the latent endogenous variables (error terms of the structural equations). MLE has demonstrated robustness in the presence of normality violations (Newcomb & Bentler, 1988). Standardized goodness of fit indices (bounded between zero and one) are available to assess the adequacy of model fit. Widely used and informative indices include the goodness of fit index (GFI), adjusted goodness of fit index (AGFI), the comparative fit index (CFI), and the root mean square error of approximation (RMSEA). These indices gauge how well the estimated covariance matrix implied by the model reproduces the observed population covariance matrix (as estimated by the sample covariance matrix).<sup>8</sup> GFI,

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<sup>7</sup> Readers unfamiliar with multivariate techniques for analysing survey data may wish to skip this section.

<sup>8</sup>The chi-square goodness of fit statistic is also available in most SEM programs. A non-significant value indicates a good fit. However, this statistic has no upper boundary and in large samples will almost always yield a statistically significant result. For this reason, standardized goodness of fit indices are recommended that adjust for sample size. Because these indices are calculated on the basis of a slightly different formulas (e.g., some impose penalties for overly complex models), researchers are advised to choose more than one when evaluating model fit. We have chosen four widely used indices: the GFI, AGFI, CFI, and RMSEA. The GFI expresses the relative amount of the population variance/covariance matrix that is accounted for by the model while the AGFI adjusts for model degrees of freedom. The CFI reflects the proportionate improvement in the fit of the estimated model compared to an

AGFI, and CFI values at or above .90 indicate a good fitting model. In contrast, a good fitting model as judged by the RMSEA generally requires a value falling below .05. For each endogenous (dependent) variable, SEM also calculates the R square value, interpreted the same way as R square values in ordinary least squares regression.

## **Multilevel Models**

While offering several important advantages for the study of the effects of school culture on student academic and behavioural functioning (e.g., estimation of mediational pathways, modelling of measurement error), SEM models possess some key limitations that warrant the adoption of supplemental analytic techniques. First, most standard SEM models (including procedures found in Amos) assume statistical independence of observations. In the present study, this assumption implies homogeneity between schools in student characteristics and outcomes. However, the nested structure of our data (students nested within schools) presents a possible violation of this assumption. Students enrolled in the same school tend to share a common set of beliefs, attitudes, and behaviours (Murray & Hannan, 1990) that may be attributed to the culture or climate of the school, the transmission of peer norms and values, or unique features of the catchment area populations in which they reside. Failure to model this within-school homogeneity (reflected in the intra-class correlation) can lead to inflated tests of significance for estimated model parameters since the difference in attitudes and behaviours of students between schools may exceed the attitudinal and behavioural differences of students attending the same schools. In the presence of nested data, SEM models are also problematic since aggregate units (in our case schools) must be treated as fixed effects. Modelling the school as a fixed effect assumes that the relationships (i.e., estimated parameters) between individual student-level predictors and outcomes is similar across schools. Finally, SEM models are ill equipped to answer what is perhaps the most fundamental question in school culture research. If schools are found to differ significantly in terms of student academic and social functioning, what factors explain those differences?

To address these issues, multilevel modelling using SAS Proc Mixed was applied to our nested school data (Littell, Milliken, Stroup, & Wolfinger, 1996). Like other multilevel modelling software (e.g., HLM), Proc Mixed simultaneously estimates two regression models for each dependent variable. In the present study this includes a within-school model and a between-school model. The within-school model estimates the effect of a given hypothesized predictor variable of interest on each dependent variable adjusting for other student-level background characteristics (i.e., the slope parameter). The intercept parameter in the within-school model represents the average score on the dependent variables for students in each school. Both parameters (intercepts and slopes) are allowed to vary randomly across the population of schools (hence the term random intercepts and slopes). In contrast, the between-school model estimates the effects of aggregate school-level predictors on between-school differences (variation) in the intercept and slope parameters for each dependent variable obtained from the within-school model adjusting for individual-level student background characteristics.<sup>9</sup> Model goodness of fit

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independence model specifying no structural relationships. The RMSEA is based on an analysis of residuals and adjusts for degrees of freedom and sample size. The RMSEA is the only fit statistic that has known distributional properties and thus permits the calculation of confidence intervals.

<sup>9</sup>Our multilevel analyses were restricted to just two levels: the school and individual student. Including a classroom level was not possible given that high school students attend many different classes during the course of a semester. Interestingly, studies at the elementary level have found a greater dependency among observations within schools

is evaluated on the basis of the proportion of explainable variation (between-school variation) that is explained by the inclusion of school-level predictors.

## DESCRIPTIVE RESULTS

### Response Rates

Table 1 presents response rates for the baseline data collection. Out of the target population of 3,265 students, the number of returned unspoiled questionnaires corresponding to the administration of the first and second sections was 2,632 and 2,563 respectively (total response rates of 81 and 78 percent). Rates for individual schools varied from a low of 43 percent to a high of 98 percent. Non-respondents consisted of students absent on both of the survey administration dates, those without active parental consent, parental refusals to participate based on passive consent procedures, and student refusals (including the return of spoiled questionnaires). Matched questionnaires (consisting of individuals for whom a complete set of data was obtained) totalled 2,403 or 74 percent of the target population (2,403/3,265). Less than 9 percent of the returned questionnaires could not be matched because of student absenteeism on either administration date or incomplete or inaccurate data on the matching criteria (i.e., respondent date of birth, gender, etc.). The maximum number of lost matches due to faulty matching was estimated at 160 (2,563-2,403).

**Table 1**  
**Student Participation Rates (Fall 1999) (n=22 schools)**

School ID	N Size (Col 1)	Q#1 (Col 2)	Q#2 (Col 3)	Matched (Col 4)	R1 (C2/C1)	R2 (C3/C1)	R3 (C4/C1)
1	300	244	234	206	0.81	0.78	0.69
2	183	150	146	126	0.82	0.80	0.69
3	125	102	104	96	0.82	0.83	0.77
4	250	217	213	212	0.87	0.85	0.85
6	193	180	176	173	0.93	0.91	0.90
7	280	243	216	206	0.87	0.76	0.74
8	84	73	78	71	0.87	0.93	0.85
9	81	57	58	53	0.70	0.72	0.65
10	38	36	34	34	0.95	0.89	0.89
11	43	37	38	32	0.86	0.88	0.74
12	112	101	104	93	0.90	0.93	0.83
14	69	63	59	58	0.91	0.86	0.84
15	382	265	253	245	0.69	0.66	0.64
16	160	73	69	67	0.46	0.43	0.42

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than among observations within classes (Palmer, Graham, White, & Hansen, 1998).

<b>School ID</b>	<b>N Size (Col 1)</b>	<b>Q#1 (Col 2)</b>	<b>Q#2 (Col 3)</b>	<b>Matched (Col 4)</b>	<b>R1 (C2/C1)</b>	<b>R2 (C3/C1)</b>	<b>R3 (C4/C1)</b>
17	205	102	106	96	0.50	0.52	0.47
18	23	15	15	15	0.65	0.65	0.65
19	100	93	88	85	0.93	0.88	0.85
50	53	47	47	41	0.89	0.89	0.77
51	130	128	122	120	0.98	0.94	0.92
52	122	117	117	114	0.96	0.96	0.93
53	307	266	263	239	0.87	0.86	0.78
54	25	23	23	21	0.92	0.96	0.84
<b>TOTAL</b>	<b>3,265</b>	<b>2,632</b>	<b>2,563</b>	<b>2,403</b>	<b>0.81</b>	<b>0.78</b>	<b>0.74</b>

**Note:** The column labeled R1 refers to the student response rates for the first half of the self-report questionnaire (Q#1) broken down by school. Rates are obtained by dividing the number of students at each school who completed the first half of the questionnaire (column 2) by the number of students enrolled at each school (column 1). Similarly, the response rates in the column labeled R2 are obtained by dividing the number of students at each school who completed the second half of the questionnaire (column 3) by the number of students enrolled at each school (column 1). Finally, response rates appearing in the column labeled R3 are derived by dividing the number of students at each school who completed both halves of the questionnaire and for whom matches were made (column 4) by the number enrolled at each school (column 1). A case was considered matched if the unique identifiers appearing on the first half of the questionnaire corresponded to the unique identifiers appearing on the second half.

### **Threats to Validity**

Because of time and fiscal constraints, we did not approach individual schools to obtain general background information (e.g., school records of truancy, disciplinary referrals) on students not participating in this study. Evidence suggests that student non-participants are more likely than participants to be disenchanting at school, score low on self-esteem, have parents with a below average education, take risks, and engage in health-compromising behaviour (Dent, Galaif, Sussman, Stacy, Burtun, & Flay, 1993). Such differences may lead to attenuated relationships among study variables and pose a threat to the external validity of findings (i.e., the ability to generalize results to all grade 9 students).

To gauge the extent of bias due to non-participation, prevalence estimates for selected demographic and socio-economic background characteristics obtained from the School Culture Student Questionnaire were compared with similar measures for Grade 9 students participating in the 1999 Ontario Student Drug Use Survey (OSDUS) (Adlaf, Paglia, & Ivis, 1999). As illustrated in Table 2, both samples contained similar distributions on several variables including living arrangements, number of siblings, mother's and father's educational attainment, family geographic relocation, and academic achievement. However, opposite findings were made with regard to gender with males less likely than females to participate in the School Culture Survey and more likely to participate in the OSDUS. The significantly greater percentage of younger students (ages 12 and 13) recorded in the School Culture Survey may be attributed to an earlier survey administration date (fall of 1999).

We also compared student responses on unmatched sections of the student self-report questionnaire (n=229 and n=160) with responses from those who completed both sections

(n=2,403 matched cases). Recall that cases were matched if the unique identifiers appearing on the first half of the questionnaire corresponded to the unique identifiers appearing on the second half. As shown in Table 3 unmatched cases (columns 3 and 5) were significantly more likely than matched cases (column 1) to score positive on a range of problem behaviour outcomes including substance use, truancy, disciplinary referrals, low academic achievement, and externalizing behavioural disorders. This finding is not surprising because of student absenteeism (i.e., students absent on one of the administration dates) and literature supporting a high degree of association between absenteeism and other behavioural problems. Although the number of unmatched questionnaires is small in comparison to the matched cases, the exclusion of the unmatched group underestimates the true prevalence of student behavioural problems (as indicated in columns 2 and 4). This suggests a higher than average level of behavioural problems among students who did not participate in the study. Readers of this report are therefore cautioned against generalizing results based on our matched sample of cases to all grade 9 students enrolled in each of the participating high schools.

**Table 2**  
**Comparison of Selected Student Background Characteristics with Information**  
**Obtained from the 1999 Ontario Student Drug Use Survey**

Variable	School Culture Survey (n=2,403)	Ontario Student Drug Use Survey (n=905)
Gender		
Male	46.5	52.8
Female	53.5	47.2
Age		
12	1.8	0.0
13	23.1	0.7
14	70.7	51.0
15	3.7	46.0
16+	0.7	2.3
Living Arrangements		
Both natural parents (vs. other)	70.9 29.1	71.4 28.6
Number Times Family Moved (past 5 years)		
Never	51.9	47.4
Once	24.0	29.4
2-3 times	16.3	17.1
4 or more times	7.8	6.1
Number Times Changed Schools <sup>1</sup>		
Never	39.6	19.7
Once	23.1	36.2
Twice	12.8	22.2
Three times	11.5	17.0
Four or more times	13.0	5.0

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<b>Variable</b>	<b>School Culture Survey (n=2,403)</b>	<b>Ontario Student Drug Use Survey (n=905)</b>
Marks Usually Gets in Subjects <sup>2</sup>		
A's	32.5	44.4
B's	39.9	36.9
C's	19.5	12.7
D's	6.3	5.0
F's	1.8	1.0
Participated in Non-School Activities (past week)		
Yes	83.4	73.7
No	16.6	26.3
Number of Siblings <sup>3</sup>		
0	5.1	7.2
1	39.0	40.6
2	30.0	27.6
3	13.1	11.7
4 or more	11.7	12.9
Father's Education		
Grade 8 or less	3.4	3.0
Some high school	14.8	13.1
Graduated high school	22.4	19.8
Some college/university	12.6	6.8
Graduated college/university	46.8	57.0
Mother's Education		
Grade 8 or less	1.5	2.8
Some high school	12.3	10.6
Graduated high school	25.3	26.0
Some college/university	14.8	8.5
Graduated college/university	46.2	52.1

<sup>1</sup>School Culture Survey asks "How often have you changed schools (not including your movement into high school)?" OSDUS asks "During the last five years, how many times have you changed schools?"

<sup>2</sup>School Culture Survey asks "What mark do you usually get as your average?" OSDUS asks "Overall, what marks do you usually get in school?"

<sup>3</sup>School Culture Survey asks "How many brothers and sisters do you have (include adopted and step-siblings)?" OSDUS asks "Including step-brothers and step-sisters, how many brothers and sisters do you have?"

**Table 3**  
**Comparison Between Student Responses on Matched and Unmatched Questionnaires**

Variable	Matched File (n=2,403)	Questionnaire #1 (n=2,632)	Questionnaire #1 (n=229)	Questionnaire #2 (n=2,563)	Questionnaire #2 (n=160)
<b>Psychological and Behavioural Outcomes</b>					
Alcohol Abuse	18.6	19.4	28.0	---	---
Alcohol Use (Weekly)	11.5	12.4	22.5	---	---
Cigarette Use (Daily)	15.0	15.9	25.9	---	---
Illicit Drug Use	8.8	9.8	20.6	---	---
Victimization	12.1	12.7	19.5	---	---
Truancy	14.2	15.3	26.2	---	---
Disciplinary Referrals	17.6	18.6	29.9	---	---
Low Academic Achievement (C average or less)	8.1	8.7	16.4	---	---
Attention Deficit/Hyperactivity	16.0	---	---	16.7	28.1
Conduct Disorder	5.2	---	---	6.3	23.8
Oppositional Disorder	24.1	---	---	25.5	46.5
School Conduct Problems	7.1	---	---	8.2	24.0
Fear of Negative Peer Evaluation	21.9	---	---	22.0	23.6
Social Avoidance/Distress Specific to New Situations	27.6	---	---	27.9	32.9
Generalized Social Avoidance/Distress	27.5	---	---	27.3	25.8
Depression (Psychological)	27.8	---	---	28.2	35.2
Depression (Physiological)	49.4	---	---	50.1	61.8
Thrill-Seeking	75.9	---	---	76.0	77.6
<b>Demographic and Socioeconomic Background Characteristics</b>					
Gender					
Male	46.5	47.6	59.6	47.2	58.3
Female	53.5	52.4	40.4	52.8	41.7
Living Arrangements					
Both natural parents	70.9	70.1	60.8	---	---
Other	29.1	29.9	39.2	---	---
3 or More School Changes	24.5	25.0	30.7	---	---
3 or More Family Moves	14.8	15.0	17.0	---	---
Dwelling Status					
Rent	13.6	---	---	14.0	19.9
Own	86.4	---	---	86.0	80.1
Mother's Education (Some high school or less)	13.8	---	---	14.0	17.2
Father's Education (Some high school or less)	18.2	---	---	18.7	27.0
Parental Unemployment	15.9	---	---	16.2	20.4

## Sample Characteristics (Individual-level)

### *Demographics*

Descriptive statistics of study demographic variables were carried out on the matched sample of students (i.e., means and standard deviations) (see Appendix C). Results for student demographic background characteristics revealed a slightly greater percentage of females (53 percent). A majority of students were 14 years of age (71 percent), belonged to intact family structures (i.e., families with both biological or natural parents present) (71 percent), and had one or two siblings (68 percent). Most resided at the same address for a period of at least 3 years (74 percent). However, a significant minority (15 percent) could be classified as frequent movers (experienced three or more family moves in the past five years). Twenty-five percent reported three or more life time school changes (excluding movement into high school). Socio-economic background indicators suggested that most students were fairly well off. A large percentage reported at least some parental post-secondary education (approximately 60 percent for both father and mother), steady parental employment in the past 6 months (both parents employed) (74 percent), and parental ownership of their dwelling (86 percent).

### *Sense of School Membership and School Culture*

Table 4 presents descriptive statistics for individual items belonging to each of the school culture and sense of school membership constructs.<sup>10</sup> A detailed description of each of these constructs appears in Appendix D. Results pertaining to student perceptions of school culture indicated a general level of satisfaction or happiness with several aspects of school life. Between one-half and three-quarters of the students sampled provided favourable opinions. In some areas, opinions were mixed. For example, while most students (61 percent) were in agreement or strong agreement with the statement teachers listen to and value student ideas, only about one-third (32.1 percent) felt that teachers and students trust one another. Mixed opinions were also evident for perceptions of school conformity to ability-focussed learning goal structures. Approximately one-third of students felt that teachers afford special privileges or treatment to kids who receive good grades (30.9 and 30.5 percent) while less than 16 percent believed that teachers care only about the smart students (11.2 percent) or that the school has given up on some of its students (15.5 percent). Slightly more than one quarter of students (26.7 percent) disagreed with the statement that teachers think how much you learn is more important than grades. Students were least satisfied with student behavioural norms at their school. Less than 30 percent indicated agreement or strong agreement with statements describing a minimum amount of truancy, theft, use of alcohol or drugs, verbal abuse, and cheating. While the vast majority of students reported a heavy emphasis placed by the school on academics, a much smaller percentage (between 20-50 percent) thought that students were academically oriented.

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<sup>10</sup> Constructs consisted of multi-item additive indices constructed on the basis of the factor and reliability analysis described in the section on measurement above. The range of index values was derived by multiplying the number of items by the number of response categories. For example, the range 6-30 for the construct “teacher support” was derived from 6 items each having five-point response categories scored from 1 to 5.

**Table 4**  
**Descriptive Statistics: School Culture, Sense of School Membership**

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
<b>School Culture</b>					
<i>Student Behavioural Norms</i>					
Very little physical fighting	11.7	29.6	33.0	16.5	9.2
Very little cutting classes/skipping school	3.0	11.6	28.1	32.3	25.0
Very little stealing	5.0	23.4	34.5	25.3	11.9
Very little damage to school property	7.5	32.1	31.3	18.8	10.3
Very little use of drugs or alcohol	4.7	13.0	24.1	27.7	30.5
Very little verbal abuse/putting people down	3.0	12.6	22.7	30.8	30.9
Very little cheating	4.7	24.3	35.1	22.6	13.3
<i>Quality of Student Relations</i>					
Students trust each other	20.4	41.9	28.9	6.0	2.9
Students who belong to different groups are friendly	15.9	41.7	32.8	6.6	3.1
Students help each other even if they are not friends	11.1	31.6	38.6	13.2	5.5
Students generally treat each other with respect and fairness	14.3	39.6	33.3	8.6	4.1
	<b>Very true</b>	<b>True</b>	<b>Somewhat True</b>	<b>Not True</b>	<b>Not at all true</b>
<i>Quality of Student/Teacher Relations</i>					
Teachers listen to/value students' ideas	17.0	44.0	32.2	4.7	2.1
Teachers and students really trust one another	8.6	23.5	46.8	15.9	5.2
Teachers treat students with respect	18.8	41.0	33.0	4.6	2.7
Teachers really care about students as individuals	14.2	38.6	36.9	7.5	2.8
<i>School Conformity Task-Focussed Learning Goal Structures</i>					
Teachers believe all students can learn	38.6	37.9	18.9	2.9	1.7
Understanding the work is more important than getting the right answers	31.5	38.7	21.2	5.6	2.9
Mistakes are ok as long as we are learning	27.0	38.9	24.9	6.5	2.7
Teachers think how much you learn is more important than test scores or grades	9.0	23.5	40.8	18.9	7.8
Teachers want students to really understand their work, not just memorize it	28.3	41.4	22.0	6.7	1.8
Trying hard counts a lot	38.6	38.2	16.8	3.8	2.6
<i>School Conformity Ability-Focussed Learning Goal Structures</i>					
Teachers treat kids who get good grades better than other kids	14.5	16.4	29.7	24.8	14.6
Only a few kids get praised for their school work	7.4	16.7	29.9	31.3	14.6
Teachers only care about the smart kids	3.9	7.3	16.2	40.1	32.4
This school has given up on some of its students	6.0	9.5	20.8	35.1	28.6
Special privileges are given to students who get the highest grades	11.3	19.2	30.2	25.0	14.3

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	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
<i>School Emphasis on Academics</i>					
Grades are very important at this school	33.4	47.9	15.7	2.0	1.0
Students have to work hard to get good grades at this school	44.9	46.9	6.2	1.3	0.9
A student's grade is lowered if he or she gets homework in late	29.0	47.9	17.5	3.6	1.9
<i>Student Body Emphasis on Academics</i>					
Students try hard to get the best grades	18.4	32.5	38.0	8.9	2.4
Students are enthusiastic about learning	4.6	15.3	45.0	24.2	11.0
Students are motivated to learn	5.0	20.2	43.9	20.1	10.8
	<b>Never</b>	<b>Hardly Ever</b>	<b>Some-times</b>	<b>Most of the time</b>	<b>Always</b>
<b>Sense of School Membership</b>					
<i>Classmate Support</i>					
Do you feel like you don't belong in your classes?	33.0	30.5	23.4	6.7	6.4
Do you feel left out by your classmates?	38.4	33.4	21.2	4.2	2.9
Do you feel like none of your classmates care about you?	40.8	32.4	17.8	5.4	3.7
<i>Teacher Support</i>					
Do you think your teachers care about you?	2.7	8.2	33.7	38.8	16.6
Do you feel very close to your teachers?	15.8	25.6	37.0	18.1	3.4
Do your teachers make you feel like you are not good enough?	41.9	27.5	22.6	4.8	3.2
Do you have a hard time talking to your teachers?	22.4	28.9	35.8	8.5	4.4
Do you have lots of respect for your teachers?	2.8	4.6	18.3	42.6	31.7
Are your teachers good to ask for help or advice about a problem you are having?	6.9	10.2	28.1	30.4	24.4
	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
<i>Acceptance/ Respect and Inclusion in Activities</i>					
People notice when I'm good at something	12.2	43.7	28.8	11.6	3.8
Other students at this school take my opinions seriously	5.5	27.7	44.7	16.3	5.7
People at this school are friendly to me	17.8	49.4	24.1	5.8	2.9
I am included in lots of activities at this school	10.8	25.2	32.9	20.7	10.4
I can really be myself at this school	22.0	44.6	22.0	7.5	3.8
Other students like the way I am	17.9	51.6	23.7	4.3	2.6
<i>Acceptance/ Respect from Teachers</i>					
Most teachers at this school are interested in me	6.4	33.2	38.8	15.4	6.3
Teachers here are not interested in people like me	4.0	8.0	25.1	41.6	21.3
The teachers here respect me	19.8	45.4	25.6	6.1	3.1
There's at least one teacher or adult at this school I can talk to if I have a problem	32.8	30.7	18.9	9.3	7.9

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	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
<i>General Acceptance and Belonging</i>					
It's hard for people like me to be accepted here	3.6	7.2	17.9	41.4	29.8
Sometimes I feel as if I don't belong here	5.9	12.6	17.3	34.9	29.3
I feel very different from most other people here	5.4	13.1	21.2	34.6	25.7
	<b>Never</b>	<b>Once</b>	<b>2-3 times</b>	<b>Once a week or more</b>	
<i>Involvement in Extra-curricular school activities</i>					
Band, orchestra, drama	71.6	6.7	4.7	16.9	
School clubs (e.g., debating, cheerleading)	81.5	7.1	3.7	7.7	
School newspaper, magazine or yearbook	92.4	4.0	1.9	1.7	
Student council or government	93.3	2.5	2.1	2.1	

At a personal level, Table 4 shows that most students possess a moderate-to-strong sense of school membership. Over two-thirds of those sampled reported feeling supported by their classmates most or all of the time. Feelings of teacher support were also strong. A majority of students (between 50 and 75 percent) indicated a high level of respect for their teachers, felt that their teachers cared about them and accepted them, and that their teachers were easy to talk to and receptive as close confidants. However, only 21 percent indicated that they felt very close to their teachers. Favourable opinions were also obtained for our measure of personal acceptance and respect from teachers. Approximately two-thirds of students indicated that their teachers respected them and were available to talk to if they had a problem. A large percentage of students (between 50 and 70 percent) expressed feelings that they were accepted and respected by others at school. However, only about one-third reported that other students took their opinions seriously (33.2 percent) or that they were included in school activities (36 percent). Most students (60 percent or higher) indicated that they felt a general sense of acceptance and belonging at school. Finally, a rather small percentage of students reported involvement in extra-curricular activities at school. Less than 20 percent were involved in school clubs at least once in the previous 4 weeks and an even smaller percentage (6-7 percent) were involved in school media (e.g., yearbook, newspaper) or student council/government.

A comparison of student responses on sense of school membership across different demographic sub-populations yielded several interesting findings. Subjective indicators of sense of school membership were collapsed into three broad categories (weak, moderate and strong) and cross-classified with selected demographic characteristics. Involvement in extra-curricular school activities in the past 4 weeks was also collapsed into three categories (never, 1-3 times, and weekly). Sense of membership tended to be significantly higher for younger students (ages 12-14 vs. 15 and older), especially in the areas of perceived classmate and teacher support and feelings of general acceptance and belonging. For all indicators of membership, females were more likely than males to express a strong satisfaction with school life and to be actively involved in extra-curricular school activities. Students living in households with both biological parents present expressed a stronger sense of membership than those living in other arrangements. Students who reported little or no environmental change in the past 5 years (measured according to frequency of school changes and family moves) were much more likely than other students to feel a strong sense of school membership. In contrast, sense of membership was lowest for those who reported three or more school changes or three or more family moves. Neither living arrangement status

nor frequency of environmental change was associated with involvement in extra-curricular activities.

We also cross-classified student perceptions of sense of school membership with various indicators of family socio-economic status including parental education (mother and father), ownership of dwelling (own vs. rent), and parental employment status (both parents employed in the past 6 months vs. other). For the most part, family SES was not associated with feelings of school membership. However, a few notable exceptions emerged from the data. Students who reported parental home ownership and parental employment were significantly more likely than other students (renters and students with one or both parents unemployed), to report feelings of general acceptance and belonging at school. For other indicators of membership, differences were minor and non-significant. Students who reported that their parents received a post-secondary education (i.e., at least some college or university) were significantly more likely than others to be actively involved in extra-curricular activities at school and to express strong feelings of classmate support. Mother's post-secondary education was associated with feelings of general acceptance and belonging and personal liking/respect and inclusion in activities by others.

Finally, sense of school membership was cross-classified with several measures of family functioning including perceived family social support, parental autonomy support, parental interest in child's education, and parental monitoring of child behaviour. We also cross-classified sense of school membership with student self-reports of frequency of involvement in out of school structured community activities (past 4 weeks). Family functioning indices were collapsed into three categories signifying weak, moderate, and strong functioning. Community activities were collapsed into three categories (never, 1-3 times, and weekly). Students belonging to families high on social support, those with parents supportive of their autonomy, those exposed to close parental monitoring of their activities, and those reporting a strong parental interest in their education, expressed a strong satisfaction with school life. Parental monitoring of child activities was positively associated with active student involvement in extra-curricular activities at school. Students actively involved in their community (e.g., frequent participation in clubs, dance, art, etc.) tended to express a strong sense of school membership and were much more likely than others to report active involvement in extra-curricular school activities.

### *Study Outcomes*

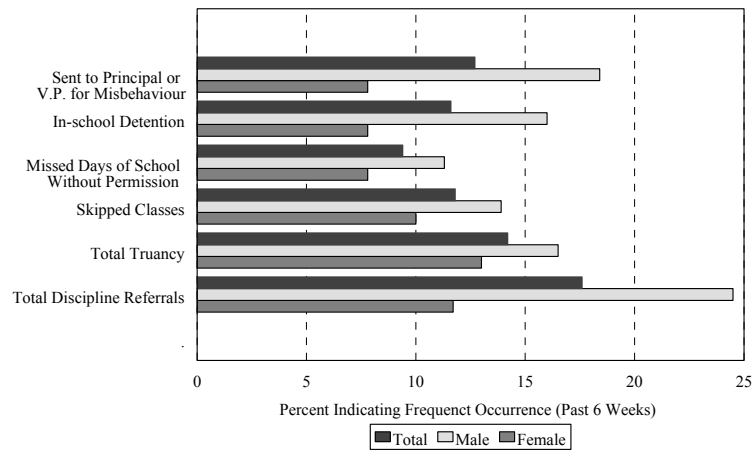
Figures 2a-5b present prevalence estimates of student academic, behavioural, and mental health problems cross-classified by gender.<sup>11</sup> A detailed description of study outcomes appears in Appendix E. Results in Figure 2a show that 14 percent of the students in our sample were truant

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<sup>11</sup>In the descriptive section of this report, certain outcomes were measured according to counts of the number of items for which an affirmative response was provided. For example, behavioural disorder symptoms were measured using a series of negatively worded items or statements (e.g., I am mean to others, I steal things at home) with three-point response categories (never/not true, sometimes/somewhat true and often/very true). An item was counted as "affirmative" if a respondent indicated "often/very true" as a response. Respondents who provided an affirmative response on 25 percent or more of the items corresponding to a particular construct were classified as having a behavioural or mental health problem. In Figure 5b, student depression, social anxiety, and thrill-seeking were measured on the basis of multi-item scales each with five-point response categories. For depression, items were counted as "affirmative" if a respondent indicated "agree or strongly agree". For social anxiety, items were counted as "affirmative" if a respondent indicated "most or all of the time".

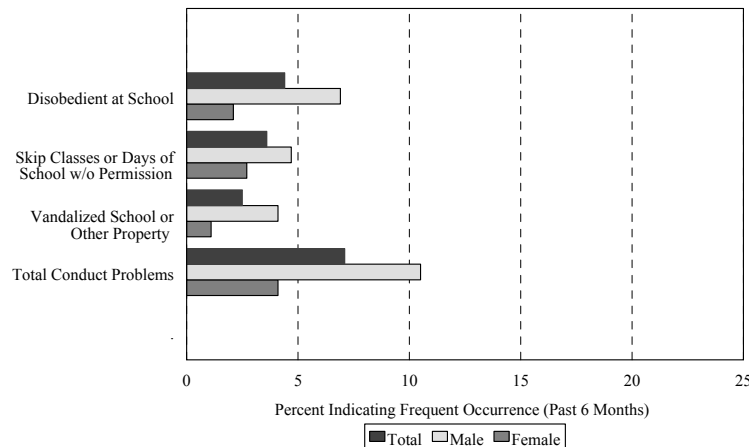
and 17 percent were disciplined for their own misbehaviour two or more times in the six week period leading up to the survey date. Problems were significantly more prevalent among males. For example, slightly less than 25 percent of the male students reported some form of disciplinary action compared to just 12 percent of females. Males were also more likely to report school conduct problems in the previous 6 months (Figure 2b). Note that in Figure 2b the prevalence of school conduct problems was considerably lower despite the broader reference period for reporting behaviour. This discrepancy is possibly a function of the different scales used to quantify frequency. Some students may have considered behaviour falling under the category of “often or very true” as far more frequent than behaviour that occurs two or three times.

Figure 2a  
Student Disciplinary Referrals and Truancy



NOTE: Frequent occurrence defined as "2 or more times"  
Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

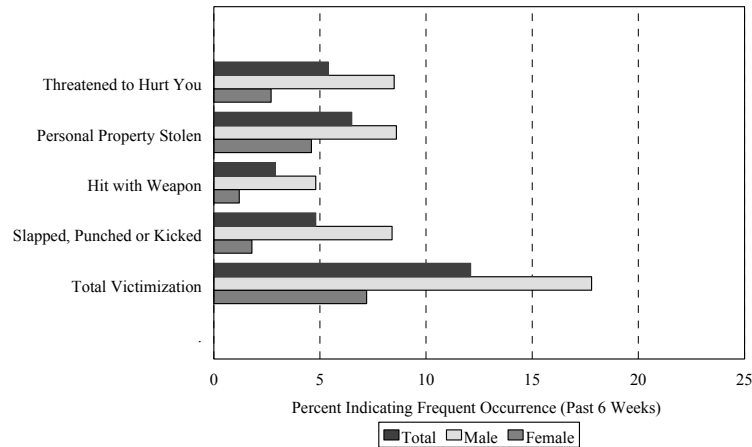
Figure 2b  
Student Conduct Problems at School



NOTE: Frequent occurrence defined as "often or very true"  
Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

In Figure 3, approximately 12 percent of those sampled reported being victimized at school on a frequent basis. The most prevalent category was theft of personal property, followed by threats of bodily harm, physical assaults, (slaps, punches or kicks) and assaults with a weapon. For all categories, males reported higher rates of victimization.

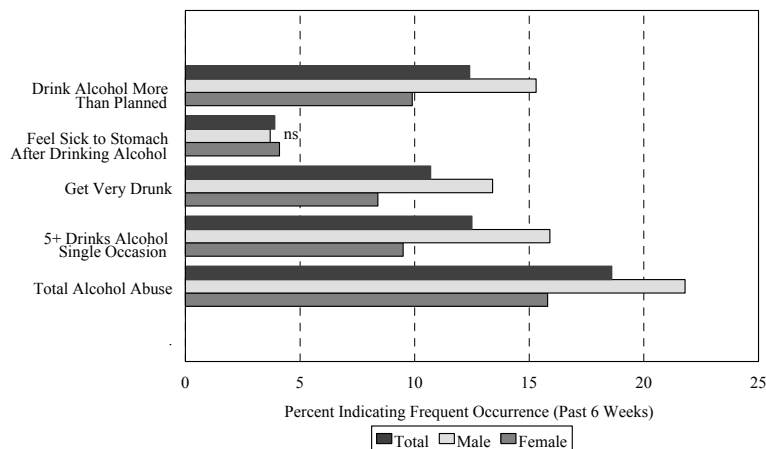
Figure 3  
Student Victimization at School



NOTE: Frequent occurrence defined as "most or all of the time"  
Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

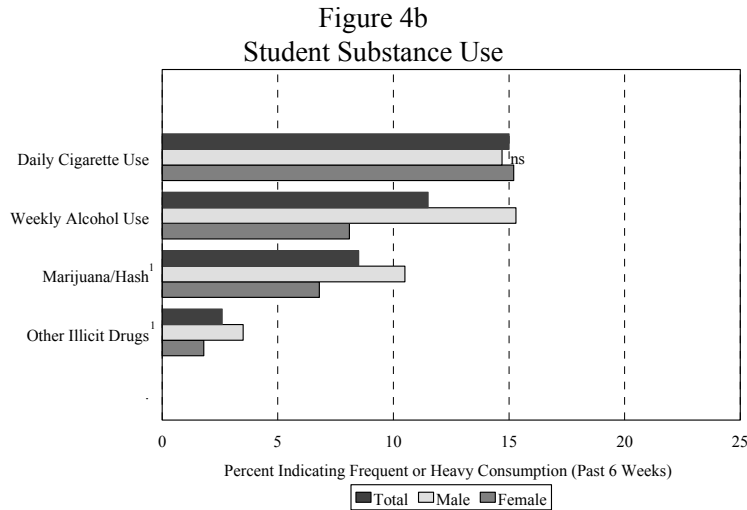
Student self-reports of alcohol abuse (presented in Figure 4a) revealed that nearly one in every five respondents (18 percent) reported two or more occurrences of at least one of four symptoms of abuse in the previous 6 weeks. The most prevalent categories or symptoms were binge drinking (5 or more drinks on a single occasion) and unplanned excessive consumption. Only four percent reported feeling sick to their stomach after drinking. Males were significantly more likely than females to report at least one symptom of abuse (22 vs. 16 percent) and ranked well above females on every symptom except physical sickness.

Figure 4a  
Student Alcohol Abuse



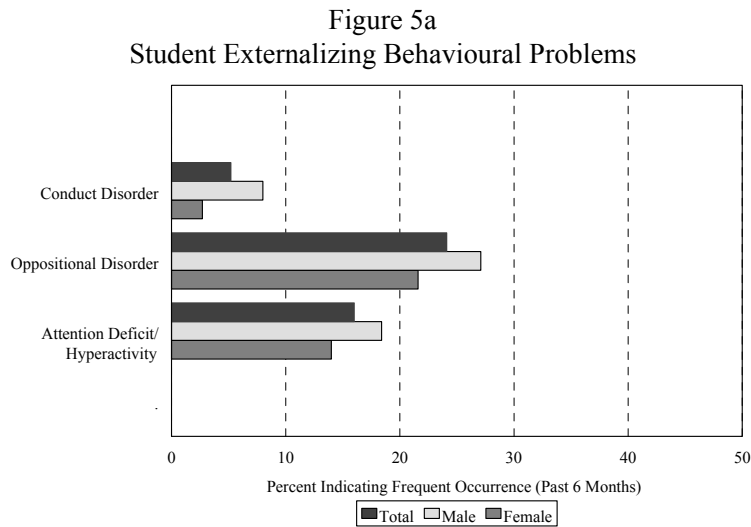
NOTE: Frequent occurrence defined as "2 or more times"  
Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

Excessive or frequent consumption of substances by students was largely confined to alcohol and tobacco. In Figure 4b, 15 percent reported daily cigarette consumption and 12 percent weekly consumption of alcohol. Eight percent indicated use of marijuana/hash on two or more occasions in the previous 6 weeks while only 3 percent reported frequent use of other illicit drugs (e.g., crack/cocaine, hallucinogens). Compared to females, males demonstrated higher rates of consumption for alcohol, marijuana, and other illicit drugs. However, both sexes reported nearly identical rates of daily cigarette use.



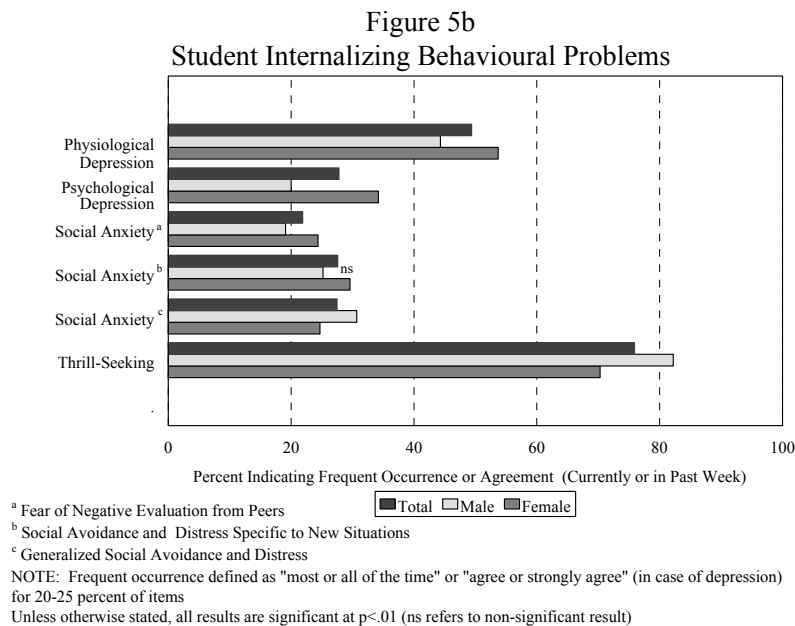
NOTE: Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)  
<sup>1</sup>Frequent occurrence defined as 2 or More Times

As shown in Figure 5a, almost one-quarter of the students in our sample displayed symptoms of oppositional disorder in the 6 month period preceding the survey (e.g., defiant and talks back to others). Roughly 17 percent displayed symptoms of attention deficit-hyperactivity (e.g., difficulty following directions or instructions). Only 5 percent were classified as having symptoms of conduct disorder (e.g., steals things from home). For each disorder, males demonstrated a slightly greater propensity to exhibit symptoms.



NOTE: Frequent occurrence defined as "often or very true" for 20-25 percent of items  
 Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

Nearly half of all students (45 percent) reported symptoms of physical depression in the past week (e.g., too tired to do things) while a much smaller percentage (25 percent) complained about psychological symptoms (e.g., felt down and unhappy) (see Figure 5b). Between 20 and 25 percent of students reported symptoms of social anxiety. Symptoms included a fear of negative evaluation from peers (e.g., worries about being teased), social avoidance and distress specific to new situations (e.g., nervous when talks to new group of kids), and generalized social avoidance and distress (e.g., quiet when with a group of kids). More than three-quarters reported a tendency toward thrill-seeking (e.g., gets a kick out of doing things that are a little dangerous). Females were significantly more likely than males to experience symptoms of depression as well as symptoms involving fear of negative evaluation from peers. However, they were significantly less likely than males to report symptoms of generalized social avoidance and distress. Males were slightly more likely than females to engage in thrill-seeking behaviour.

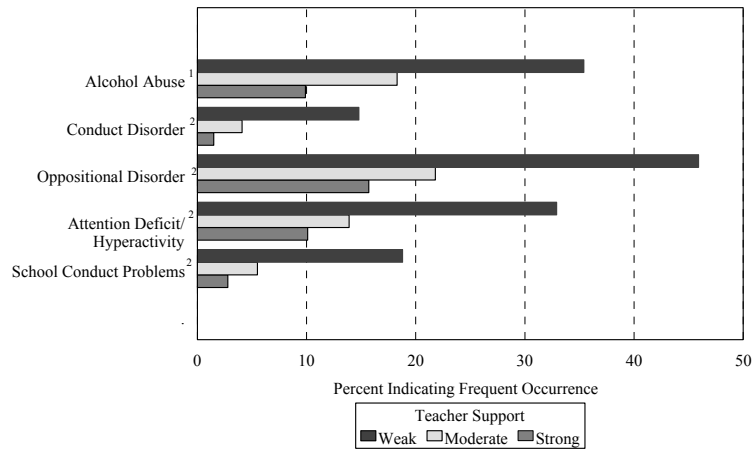


Next, student externalizing and internalizing behavioural problems were crossclassified by personal sense of school membership (see Figures 6a – 6c). Sense of school membership was defined according to six indicators: classmate support, teacher support, feelings of acceptance/respect from others and inclusion in activities, feelings of acceptance/respect from teachers, general feelings of acceptance and belonging, and frequency of involvement in extra-curricular activities at school. Indicators of membership consisted of multi-item additive indices with each item containing five-point response categories ranging from “strongly agree” to “strongly disagree”. Indices were collapsed into three broad categories signifying weak, moderate, and strong sense of membership. Frequency of involvement in school activities was collapsed into three categories (never, 1-3 times, and weekly). To conserve space, only figures pertaining to teacher and classmate support are presented here. All remaining figures (with the exception of those involving extra-curricular activities) are shown in Appendix F.

Students expressing strong feelings of sense of school membership were significantly less likely than others to exhibit a range of externalizing and internalizing behavioural problems. For

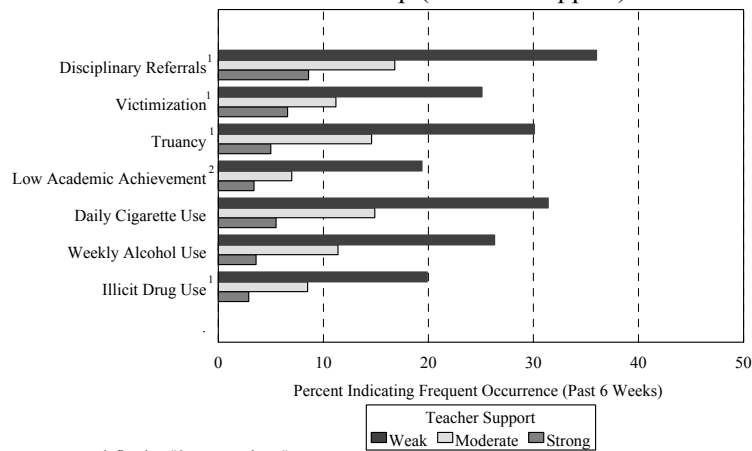
example, results in Figure 6a reveal that just 15 percent of students who indicated a strong sense of teacher support reported frequently occurring symptoms of oppositional disorder, less than half the observed rate (46 percent) for those who indicated weak support.

Figure 6a  
Student Externalizing Behavioural Problems by Sense of School Membership (Teacher Support)



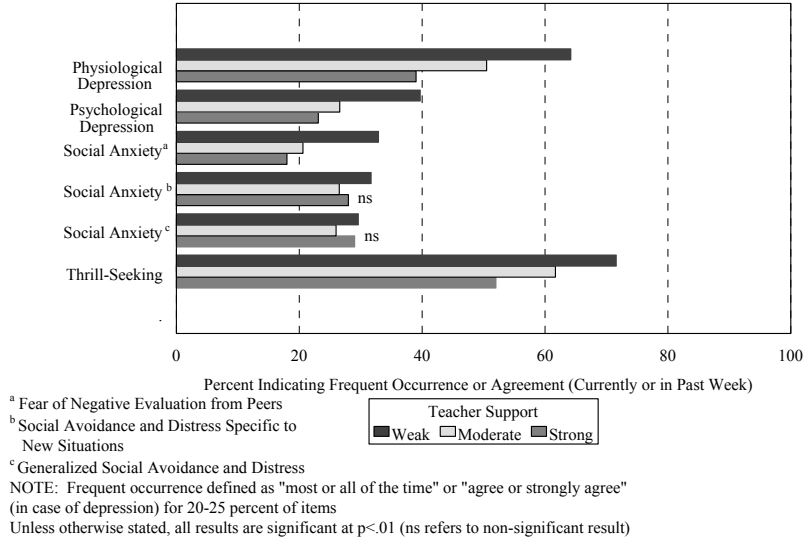
<sup>1</sup>Frequent occurrence defined as "2 or more times" in the past 6 weeks;  
<sup>2</sup>Frequent occurrence defined as "often or very true" for 20-25 percent of items in the past 6 months  
 NOTE: Unless otherwise stated, all results are significant at p<.01 (ns refers to non-significant result)

Figure 6b  
Student Academic and Behavioural Difficulties by Sense of School Membership (Teacher Support)



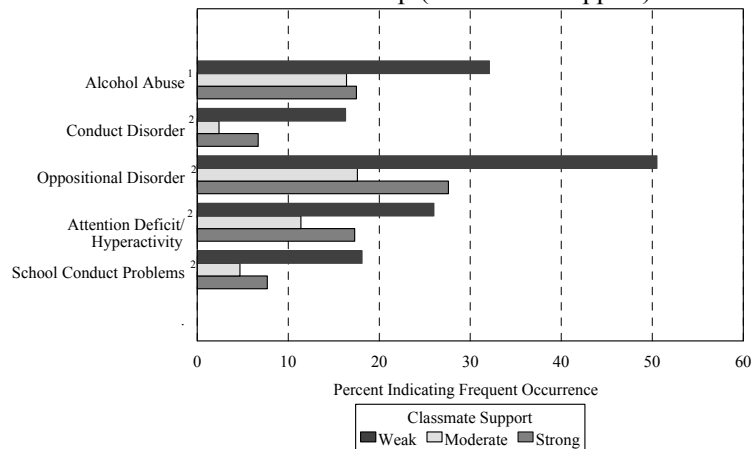
<sup>1</sup>Frequent occurrence defined as "2 or more times"  
<sup>2</sup>Grade of C's or less in most subject areas  
 NOTE: Unless otherwise stated, all results are significant at p<.01 (ns refers to non-significant result)

Figure 6c  
 Student Internalizing Behavioural Problems by  
 Sense of School Membership (Teacher Support)

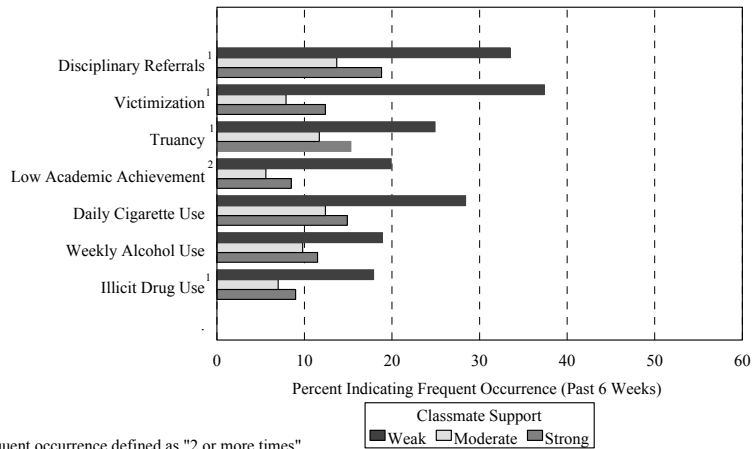


Students expressing strong feelings of classmate support (Figures 7a-c) were slightly more likely than those expressing moderate support to engage in a variety of problem behaviours. However, the prevalence of academic and behavioural problems among this group was well below figures obtained for those expressing weak support.

Figure 7a  
 Student Externalizing Behavioural Problems by  
 Sense of School Membership (Classmate Support)



**Figure 7b**  
**Student Academic and Behavioural Difficulties by**  
**Sense of School Membership (Classmate Support)**

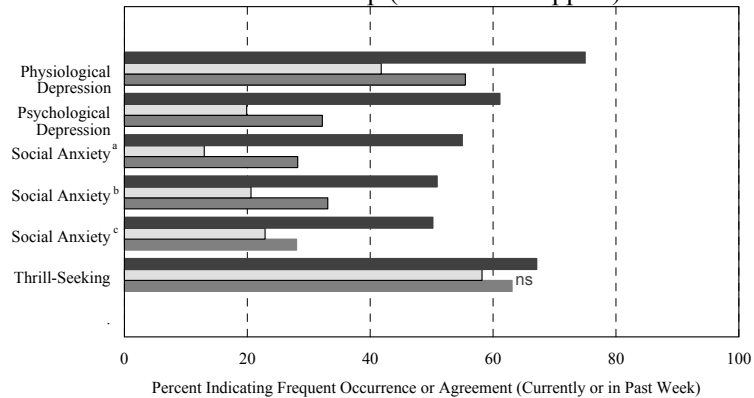


<sup>1</sup>Frequent occurrence defined as "2 or more times"

<sup>2</sup>Grade of C's or less in most subject areas

NOTE: Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

**Figure 7c**  
**Student Internalizing Behavioural Problems by**  
**Sense of School Membership (Classmate Support)**



<sup>a</sup>Fear of Negative Evaluation from Peers

<sup>b</sup>Social Avoidance and Distress Specific to New Situations

<sup>c</sup>Generalized Social Avoidance and Distress

NOTE: Frequent occurrence defined as "most or all of the time" or "agree or strongly agree" (in case of depression) for 20-25 percent of items

Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

Among the five subjective indicators of membership, a strong sense of classmate support and feelings of general acceptance and belonging appeared to function as the most salient factors in distinguishing depressed and socially anxious students from those with few or no disorder symptoms. In contrast, a strong sense of teacher support and a strong sense of personal liking/respect from teachers tended to be more highly associated with a low prevalence of externalizing problems. In general, students reporting a strong sense of teacher support and a strong sense of acceptance/respect from teachers were no less likely than other students to exhibit symptoms of social avoidance and distress specific to new situations and generalized social avoidance and distress. Students who reported at least some weekly involvement in extra-curricular activities at school (results not shown) were significantly more likely than others to perform better academically and to refrain from regular tobacco and illicit drug use. However, involvement in activities was not related to other outcomes.

Finally, we cross-classified student behavioural outcomes with several indicators of school culture. Results (shown in Appendix G) revealed that students who judged their school culture as positive in terms of quality of student relations, quality of teacher/student relations, behavioural norms of the student body (e.g., little theft, alcohol/drug use, etc.), school conformity to task-focussed learning goal structures, weak school conformity to ability-focussed learning goal structures, and student body emphasis on academics were significantly less likely than others to report a range of externalizing behavioural problems. Thus, among students who perceived high quality student relations at school, only 13 percent indicated frequently occurring symptoms of attention-deficit/hyperactivity. This compares to 30 percent for those describing relations in less favourable terms. Consistent relationships were also obtained between perceptions of school culture and internalizing behavioural problems. Those who provided favourable ratings of school culture were significantly less likely than others to report feeling depressed in the previous week. The relationship between student perceptions of school culture and social anxiety was more variable. Feelings of anxiety were less prevalent among those who perceived high quality student relations.

### **Summary of Descriptive Results**

This section described the prevalence of student perceptions of school culture, personal sense of school membership, and several behavioural outcomes. Measures of school culture and sense of school membership were crossclassified with selected student background characteristics. The following paragraphs summarize the highlights of those findings:

- In general, a majority of students in our sample rated the culture of their school in favourable terms. However, in some areas, results were mixed. For example, although most students rejected statements that the school has given up on some of its students and that teachers only care about smart kids, nearly one third believed that teachers afford special privileges or treatment to kids who receive good grades. Similarly, while most students described teacher/student relations at school in positive terms (e.g., warm and respectful), only one-third felt that teachers and students trust one another. Students were least satisfied with the behaviour of other students at their school (i.e., perceptions of student behavioural norms—truancy, theft, verbal abuse, alcohol or drug use, cheating).
- At the individual-level most students expressed a moderate-to-strong sense of school membership defined by feelings of classmate and teacher support, feelings of

acceptance/respect from others and inclusion in activities, feelings of acceptance/respect from teachers, and general feelings of acceptance and belonging. A few exceptions are worth noting. Only one-third of the students reported that other students took their opinions seriously or that they felt included in school activities. In addition, a very large percentage of students (80 percent and upward) did not participate in extra-curricular activities at school (excluding sports).

- Perceived sense of school membership varied by selected student demographic and socio-economic background characteristics. For most indicators, strong feelings of membership were more likely to occur among females, younger students, students from stable family backgrounds, students from families high on social functioning, and those indicating frequent involvement in structured community activities. Less important in terms of differentiating sense of membership was family socio-economic status, in particular, parental employment status and ownership of dwelling (own vs. rent).
- Most students in our sample had not experienced an academic or behavioural problem in the period leading up to the survey date. However, a significant percentage (between 10 and 25 percent) did report academic difficulties and met our criteria for defining problems in several areas: alcohol and other drug use, alcohol abuse, in-school behavioural problems (i.e., disciplinary referrals and truancy), and externalizing behavioural disorders (i.e., conduct disorder, oppositional disorder, and attention-deficit/hyperactivity). Between 10 and 15 percent of students had been victimized at school in the previous 6 weeks.
- The percentage of students experiencing symptoms of internalizing behavioural problems (e.g., depression, social anxiety, and thrill-seeking) generally out-surpassed the percentage with externalizing problems. Almost one-half (45 percent) indicated agreement or strong agreement with statements pertaining to fatigue, sluggishness, difficulty sleeping, poor appetite, and attention problems. Three-quarters of the students sampled demonstrated a strong propensity to take risks (i.e., thrill-seeking behaviour).
- Less prevalent, but still well above normal rates observed for most externalizing problems, were various facets of social anxiety. Between 20 and 25 percent of the students reported frequently occurring symptoms of anxiety including negative peer evaluations (e.g., worries about being teased), social avoidance/distress specific to new situations (e.g., nervous when talks to new group of kids), and generalized social avoidance and distress (e.g., quiet when with a group of kids).
- Academic difficulties, externalizing behavioural problems, thrill-seeking behaviour, and victimization at school tended to occur more frequently among males. However, females were just as likely as males to report daily cigarette smoking and were more likely than males to report feeling depressed and socially anxious (e.g., fear of negative evaluation from peers and social avoidance and distress specific to new situations).
- Cross-tabular results revealed a noticeable protective effect associated with possessing a strong personal sense of school membership. Students who felt a strong sense of membership in terms of perceived classmate and teacher support, feelings of acceptance/respect from others and inclusion in activities, feelings of acceptance/respect from teachers, and general feelings of acceptance and belonging, were significantly less likely than others to experience

or engage in a variety of problem behaviours. Frequent participation in extra-curricular activities at school was associated with better academic performance and lower rates of tobacco and illicit drug use but was unrelated to most other problems.

## MULTIVARIATE RESULTS

### Results from OLS Regression Models

A second objective of this study was to identify key aspects of school culture (e.g., quality of student/teacher relationships) positively related to student sense of school membership and whether feelings of membership in turn contribute to enhancements in student academic and behavioural functioning. According to the Schools as Communities perspective, young people exposed to a favourable culture are hypothesized to develop a strong sense of school membership believed to reduce the likelihood of academic and behavioural problems. To test whether the effect of school culture on adolescent academic and behavioural problems was mediated through sense of school membership, we adopted the rationale for mediator tests as outlined in Baron and Kenny (1986). Following this framework, evidence in support of sense of school membership as a mediator was demonstrated when: 1) school culture was related to sense of school membership; 2) sense of school membership was related to a particular academic or behavioural outcome; and 3) sense of school membership weakened the magnitude of the relationship between school culture and a particular outcome.

A schematic drawing of the Barren and Kenny framework is presented in Figure 8. The framework (hence referred to as our revised theoretical framework) represents a subset of the pathways outlined in the general Schools as Communities perspective described in Figure 1. Model pathways (containing single-headed arrows) move from left to right and demonstrate how the effects of school culture are transmitted to effect change in student outcomes. School culture is represented by 6 composite indices reported in Table 4 considered by theorists as key elements of the Schools as Communities Perspective.<sup>12</sup> Included are the social environment of the school (quality of student relations, quality of teacher/student relations), student body behavioural norms, and school learning goal structures (school conformity to ability and task-focussed learning goal structures, and degree of emphasis placed by the school on academics pursuits). Sense of school membership is measured according to composite indices of perceived classmate and teacher support reported in Table 4.<sup>13</sup> Self-esteem is included as a potential mediator of the relationship between sense of school membership and student outcomes. As reported earlier, several studies have identified self-esteem as both a consequent of feelings of school membership and an important predictor of student academic and behavioural outcomes. Other hypothesized predictors included as controls in our analysis were selected on the basis of our review of prior literature. These included student demographics, family socio-economic status, indicators of family functioning, peer delinquency, and level of involvement in structured community activities.

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<sup>12</sup>Excluded from this study was a direct measure of student involvement in classroom and school decision-making.

<sup>13</sup>Although we examined several hypothesized indicators of sense of school membership in the descriptive section of this report, only teacher and classmate support were retained in the multivariate analyses. It was felt that these constructs captured best the different sources of support and belonging perceived by students in the school environment. Our decision was also based on the need to arrive at a parsimonious (and hence easily interpretable) set of models.

**Figure 8**  
**Revised Theoretical Model**

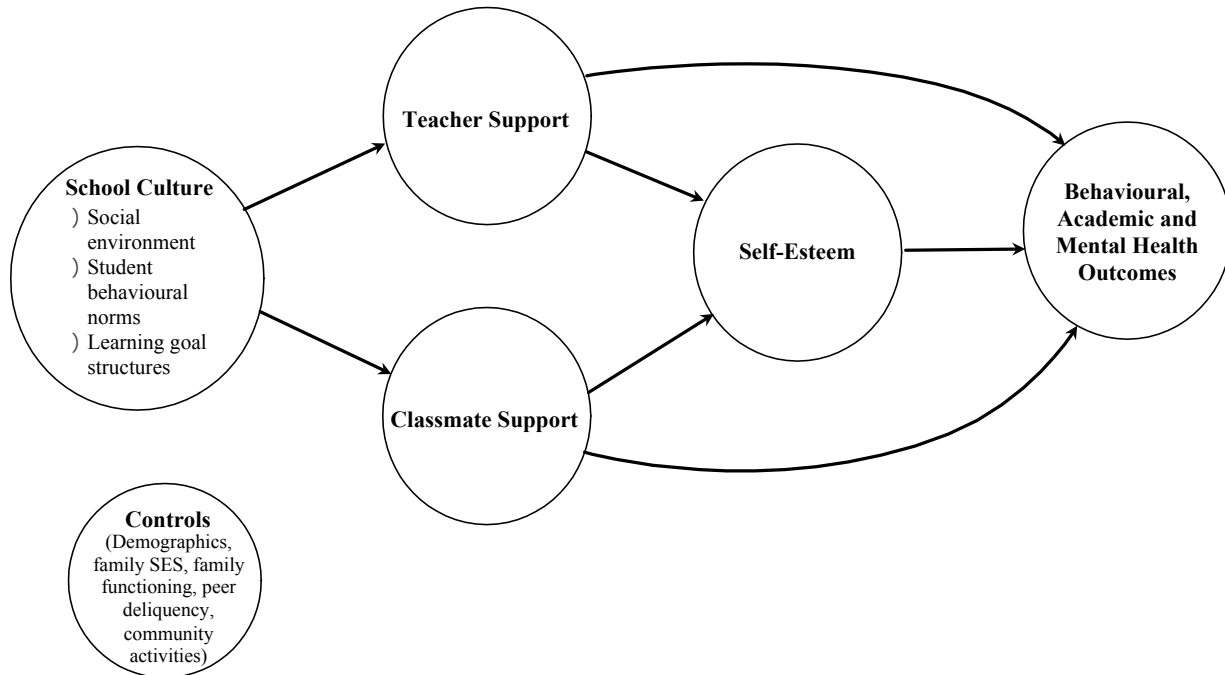


Table 5 presents Ordinary Least Squares Regression (OLS) estimates of the relationship between school culture and individual sense of school membership. Standardized beta weights (bounded between zero and one) were estimated capturing the unique effect of a given predictor variable (e.g., school culture) on sense of school membership adjusting for all other variables in the model. Significance of model effects was judged by dividing the unstandardized beta weights (not shown) by the associated standard errors. Given the large sample, only results significant at  $p < .01$  were reported. Model fit was judged according to the proportion of variation on the dependent variables (classmate and teacher support) accounted for by the inclusion of independent variables in the respective models. For each outcome, two models were estimated. Model One included background characteristics only. Model Two included background characteristics plus the six indicators of school culture.

Adjusting for student background characteristics, results in Model Two of Table 5 revealed weak to moderate positive effects (beta weights) of several aspects of school culture on perceived teacher and classmate support. These results satisfy the first condition of mediation outlined in the Baron and Kenny framework. Most aspects of school culture emerged as significant predictors of teacher support but were somewhat less associated with classmate support. One exception was the observed positive relationship (moderate in strength) between perceived quality of student relations and classmate support ( $b = .22$ ). Specifically, an increase in student perceptions of quality student relations at school was associated with an increase in personal feelings of classmate support. Interestingly, student perceptions of student body behavioural norms (e.g., little theft, drug use) were not uniquely related to either indicator of membership.

Little or no relationship was observed between student demographics, family socio-economic status, and sense of school membership. The most consistent predictors of membership were those pertaining to family functioning. Feelings of membership tended to be significantly higher among students belonging to stable and highly supportive families and those with parents closely monitoring their activities and showing an active interest in their education. Students who reported frequent involvement in community activities (e.g., clubs, art lessons) were slightly more likely than others to perceive teacher support at school (a positive relationship). Last, sense of school membership (both classmate and teacher support) was significantly lower among students involved in delinquent peer groups (a negative relationship).

Results in Table 5 also provided evidence that a substantial portion of the beneficial impact of moderate-to-strong levels of family functioning on personal sense of school membership was achieved indirectly through favourable perceptions of school culture. For both teacher and classmate support, sharp reductions in the estimated beta weights (associated with family functioning) were observed following the introduction of the school culture indicators. For example, the beta weight for family support as a predictor of perceived teacher support declined from .21 in Model One (background characteristics only) to just .08 in Model Two (background characteristics plus school culture). Similar evidence of mediation was observed for involvement in delinquent peer groups.

**Table 5**  
**OLS Regression of Sense of School Membership on**  
**Student Background Characteristics and School Culture**

<b>Predictor</b>	<b>Teacher Support</b>		<b>Classmate Support</b>	
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 1</b>	<b>Model 2</b>
<i>Background Characteristics</i>				
Sex (female)	ns	ns	ns	ns
Age	ns	ns	ns	ns
Low (SES)	ns	ns	ns	ns
Missing (SES)	ns	ns	ns	ns
Family Stability	ns	ns	0.08**	0.06*
Family Social Support	0.21**	0.08**	0.16**	0.12**
Parental Autonomy Support	ns	ns	0.06*	ns
Parental Interest Child's Education	ns	ns	0.07*	0.07*
Parental Monitoring Child Activities	0.15**	0.08**	ns	ns
Peer Delinquency	-0.19**	-0.05**	-0.12**	-0.06*
Involvement in Community Activities	0.08**	0.05**	ns	ns
<i>School Culture</i>				
Ability-Focussed Learning Goal Structures (weak)	---	0.22**	---	0.13**
Task-Focussed Learning Goal Structures	---	0.13**	---	0.08**
Emphasis on Academics	---	0.05**	---	ns
Student Relations	---	0.07**	---	0.22**
Student/Teacher Relations	---	0.34**	---	ns
Student Behavioural Norms	---	ns	---	ns
R <sup>2</sup> (Adj.)	0.21	0.54	0.10	0.19

\* p<.01; \*\* p<.001; n=2,403

Tables 6a-i present OLS regression estimates of the relationship between school culture, sense of school membership, and student academic and behavioural functioning. For each outcome, two separate models were estimated. Model One included dimensions of school culture plus student background characteristics (e.g., demographics, family, and peers). Model Two included dimensions of school culture, student background characteristics, and three hypothesized mediators: classmate support, teacher support, and self-esteem. As in Table 5, effects consisted of standardized beta weights with a criterion for statistical significance set at  $p < .01$ . To avoid unnecessary detail, only significant effects were reported.<sup>14</sup>

Model One results revealed several dimensions of school culture uniquely related to one or more academic/behavioural outcomes. The most consistent result occurred for perceptions of school conformity to ability-focussed learning goal structures. Holding constant student background characteristics, students who perceived little or no school conformity to ability-focussed learning goal structures were significantly less likely than other students (a negative relationship) to suffer from externalizing/internalizing behavioural problems. They were also more likely to perform well academically (a positive relationship). In contrast, school conformity to task-focussed learning goal structures was generally not associated with most outcomes. Perceived school emphasis on academics was negatively related to disciplinary referrals, truancy, and use of substances but was not related to other outcomes. Students who perceived quality student relations at school were significantly less likely than others to suffer from symptoms of depression and social anxiety as well as substance use, victimization, and symptoms of oppositional disorder. Unexpectedly, student perceptions of quality student/teacher relations at school did not emerge as a significant predictor of academic performance or externalizing behavioural problems. In fact, students who perceived quality relationships between students and teachers were more likely than others to report symptoms of depression and social anxiety. Last, student perceptions of positive student body behavioural norms (e.g., little theft, alcohol/drug use) were associated with reduced behavioural problems, in particular, self-reports of victimization at school.

Model Two results revealed weak-to-moderate relationships between sense of school membership (classmate and teacher support), self-esteem, and student academic and behavioural functioning, thus satisfying the second Baron and Kenny condition for mediation. Interestingly, perceived support from teachers emerged as a consistent predictor of strong academic performance and reduced externalizing behavioural problems but was not associated with internalizing problems. In contrast, significant relationships involving perceived classmate support were restricted to reduced symptoms of depression and social anxiety. Students expressing positive feelings of self-esteem were more likely than others to report strong academic performance and tended to display fewer symptoms of externalizing behavioural problems (i.e., conduct, attention-deficit hyperactivity, and oppositional order) and symptoms of depression and social anxiety. Positive feelings of self-esteem were also negatively related to thrill-seeking behaviour and victimization at school but were not related to substance use, alcohol abuse, disciplinary referrals, or truancy.

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<sup>14</sup> To conserve space, formal tests of mediation for self-esteem are not presented. Multivariate analyses confirmed a significant relationship (in the presence of controls) between favourable impressions of some aspects of school culture and enhanced feelings of self-esteem. Positive feelings of self-esteem in turn were significantly related to several academic and behavioural outcomes.

Model Two results also revealed sizable reductions in the estimated regression coefficients (beta weights) for some dimensions of school culture following the introduction of the hypothesized model mediators, an indication that the effects of school culture on student academic and behavioural outcomes were partially mediated by student sense of school membership and self-esteem (the third Baron and Kenny condition for mediation). Evidence of mediation was most pronounced for perceived school conformity to ability-focussed learning goal structures and quality of student relations at school. For several outcomes, the magnitude of the beta weights for these dimensions of school culture declined from Model One to Model Two by as much as 20-40 percent. Little or no evidence of mediation occurred for school emphasis on academics and quality of student/teacher relations. Perceptions of positive student body behavioural norms appeared to maintain a unique (and direct) association with several outcomes following the introduction of the sense of school membership and self-esteem variables.

Respondent gender as well as family, peer group, and community influences operated along side dimensions of school culture as salient predictors of student academic and behavioural functioning. Compared to females, males performed less well academically, reported higher rates of substance use, truancy, and disciplinary referrals, experienced a higher number of incidents of victimization at school, demonstrated a greater propensity for thrill-seeking behaviour, and exhibited elevated symptom counts of several externalizing behavioural problems (e.g., alcohol abuse, conduct disorder, oppositional disorder, and attention-deficit/hyperactivity). In contrast, females were significantly more likely than males to suffer from symptoms of depression and social anxiety. Students belonging to families low on socio-economic status (i.e., families marked by low parental education, a rented dwelling, parental unemployment, and four or more siblings) were less likely than moderate-to-high SES students to perform well academically. They were also more likely to use substances, abuse alcohol, receive disciplinary referrals for inappropriate behaviour, and display symptoms of oppositional disorder and physiological depression.

Tables 6a-i also showed that students belonging to stable, highly supportive family environments in which parents actively monitor their child's activities and maintain an active interest in their education were less likely than other students to experience disciplinary referrals and a range of problem behaviours. Paradoxically, students high on some aspects of family functioning, specifically, family stability and parental monitoring, were more likely to report symptoms of social anxiety (i.e., fear of negative evaluation from peers and social avoidance and distress specific to new situations). Students immersed in delinquent peer groups were affected adversely by a wide range of academic and behavioural problems. Fewer unique relationships were observed for involvement in community activities. Exceptions included stronger academic performance and reduced substance use associated with higher levels of involvement. Unexpectedly, results showed a weak positive relationship between frequent community involvement and victimization at school.

**Table 6a**  
**OLS Regression of Academic and Behavioural Difficulties on**  
**Sense of School Membership, School Culture, and Self-Esteem**

Predictor	Overall Grades		Subject Areas	
	Model 1	Model 2	Model 1	Model 2
<i>Background Characteristics</i>				
Sex (female)	0.08**	0.10**	ns	ns
Age	0.07**	0.07**	0.06*	0.06**
Low (SES)	-0.12**	-0.12**	-0.06*	-0.06*
Missing (SES)	-0.08**	-0.08**	ns	ns
Family Stability	0.12**	0.12**	0.09**	0.08**
Family Social Support	ns	ns	ns	ns
Parental Autonomy Support	ns	ns	ns	ns
Parental Interest Child's Education	0.09**	0.08**	ns	ns
Parental Monitoring Child Activities	0.09**	0.07*	ns	ns
Peer Delinquency	-0.10**	-0.09**	-0.11**	-0.09**
Involvement in Community Activities	0.10**	0.09**	0.08**	0.08**
<i>School Culture</i>				
Ability-Focussed Learning Goal Structures (weak)	0.12**	ns	0.10**	ns
Task-Focussed Learning Goal Structures	ns	ns	ns	ns
Emphasis on Academics	ns	ns	ns	ns
Student Relations	ns	ns	ns	ns
Student/Teacher Relations	ns	-0.09*	ns	ns
Student Behavioural Norms	ns	ns	ns	ns
<i>Sense of School Membership</i>				
Teacher Support	---	0.23**	---	0.25**
Classmate Support	---	ns	---	ns
<i>Self-Esteem</i>				
	---	0.09**	---	0.09**
R <sup>2</sup> (Adj.)	0.16	0.19	0.11	0.15

\* p<.01  
\*\* p<.001  
n=2,403

**Table 6b**  
**OLS Regression of Academic and Behavioural Difficulties on**  
**Sense of School Membership, School Culture, and Self-Esteem**

Predictor	Disciplinary Referrals		School Conduct Problems	
	Model 1	Model 2	Model 1	Model 2
<i>Background Characteristics</i>				
Sex (female)	-0.10**	-0.11**	ns	-0.06*
Age	ns	ns	ns	ns
Low (SES)	0.07**	0.07**	ns	ns
Missing (SES)	0.08**	0.08**	0.05**	ns
Family Stability	-0.13**	-0.12**	-0.05*	ns
Family Social Support	ns	ns	ns	ns
Parental Autonomy Support	ns	ns	ns	ns
Parental Interest Child's Education	-0.11**	-0.10**	ns	ns
Parental Monitoring Child Activities	-0.09**	-0.08**	-0.15**	-0.13**
Peer Delinquency	0.24**	0.23**	0.37**	0.36**
Involvement in Community Activities	ns	ns	ns	ns
<i>School Culture</i>				
Ability-Focussed Learning Goal Structures (weak)	-0.11**	-0.07*	-0.11**	-0.08**
Task-Focussed Learning Goal Structures	ns	ns	ns	ns
Emphasis on Academics	-0.09**	-0.09**	ns	ns
Student Relations	ns	ns	ns	ns
Student/Teacher Relations	ns	ns	ns	ns
Student Behavioural Norms	ns	ns	ns	ns
<i>Sense of School Membership</i>				
Teacher Support	---	-0.17**	---	-0.13**
Classmate Support	---	ns	---	ns
<i>Self-Esteem</i>				
	---	ns	---	-0.08**
R <sup>2</sup> (Adj.)	0.23	0.24	0.33	0.34

\* p<.01  
\*\* p<.001  
n=2,403

**Table 6c**  
**OLS Regression of Academic and Behavioural Difficulties on**  
**Sense of School Membership, School Culture, and Self-Esteem**

<b>Predictor</b>	<b>Substance Use</b>		<b>Truancy</b>	
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 1</b>	<b>Model 2</b>
<i>Background Characteristics</i>				
Sex (female)	0.05*	ns	ns	ns
Age	ns	ns	0.06**	0.06**
Low (SES)	0.06*	0.06**	ns	ns
Missing (SES)	ns	ns	ns	ns
Family Stability	-0.10**	-0.10**	-0.08**	-0.08**
Family Social Support	ns	ns	ns	ns
Parental Autonomy Support	ns	ns	ns	ns
Parental Interest Child's Education	ns	ns	ns	ns
Parental Monitoring Child Activities	-0.11**	-0.09**	-0.16**	-0.15**
Peer Delinquency	0.38**	0.37**	0.26**	0.25**
Involvement in Community Activities	-0.06**	-0.06**	ns	ns
<i>School Culture</i>				
Ability-Focussed Learning Goal Structures (weak)	-0.09**	-0.06*	-0.09**	ns
Task-Focussed Learning Goal Structures	ns	ns	ns	ns
Emphasis on Academics	-0.06**	-0.05*	-0.10**	-0.09**
Student Relations	ns	ns	ns	ns
Student/Teacher Relations	-0.07*	ns	ns	ns
Student Behavioural Norms	ns	ns	ns	ns
<i>Sense of School Membership</i>				
Teacher Support	---	-0.15**	---	-0.17**
Classmate Support	---	ns	---	ns
<i>Self-Esteem</i>				
	---	ns	---	ns
<b>R<sup>2</sup> (Adj.)</b>	<b>0.32</b>	<b>0.33</b>	<b>0.21</b>	<b>0.22</b>

\* p<.01  
\*\* p<.001  
n=2,403

**Table 6d**  
**OLS Regression of Academic and Behavioural Difficulties on**  
**Sense of School Membership, School Culture, and Self-Esteem**

Predictor	Attention Deficit/Hyperactivity		Alcohol Abuse	
	Model 1	Model 2	Model 1	Model 2
<i>Background Characteristics</i>				
Sex (female)	ns	ns	ns	ns
Age	ns	ns	ns	ns
Low (SES)	ns	ns	0.06*	0.06*
Missing (SES)	ns	ns	ns	ns
Family Stability	ns	ns	-0.07**	-0.07**
Family Social Support	-0.07*	ns	ns	ns
Parental Autonomy Support	ns	ns	ns	ns
Parental Interest Child's Education	ns	ns	ns	ns
Parental Monitoring Child Activities	-0.06*	ns	-0.10**	-0.09**
Peer Delinquency	0.28**	0.26**	0.33**	0.32**
Involvement in Community Activities	ns	ns	ns	ns
<i>School Culture</i>				
Ability-Focussed Learning Goal Structures (weak)	-0.10**	ns	-0.12**	-0.10**
Task-Focussed Learning Goal Structures	ns	ns	ns	ns
Emphasis on Academics	ns	ns	ns	ns
Student Relations	ns	ns	ns	ns
Student/Teacher Relations	ns	ns	ns	ns
Student Behavioural Norms	-0.10**	-0.09**	ns	ns
<i>Sense of School Membership</i>				
Teacher Support	---	-0.13**	---	-0.13**
Classmate Support	---	ns	---	ns
<i>Self-Esteem</i>				
	---	-0.15**	---	---
<i>R<sup>2</sup> (Adj.)</i>	0.19	0.21	0.24	0.24

\* p<.01  
\*\* p<.001  
n=2,403

**Table 6e**  
**OLS Regression of Academic and Behavioural Difficulties on**  
**Sense of School Membership, School Culture, and Self-Esteem**

<b>Predictor</b>	<b>Conduct Disorder</b>		<b>Oppositional Disorder</b>	
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 1</b>	<b>Model 2</b>
<i>Background Characteristics</i>				
Sex (female)	-0.06**	-0.08**	ns	ns
Age	ns	ns	ns	ns
Low (SES)	ns	ns	0.06*	0.06*
Missing (SES)	ns	ns	ns	ns
Family Stability	ns	ns	ns	ns
Family Social Support	ns	ns	-0.11**	-0.06*
Parental Autonomy Support	ns	ns	-0.06**	ns
Parental Interest Child's Education	-0.05*	ns	ns	ns
Parental Monitoring Child Activities	-0.11**	-0.10**	-0.06*	ns
Peer Delinquency	0.45**	0.43**	0.32**	0.30**
Involvement in Community Activities	ns	ns	ns	ns
<i>School Culture</i>				
Ability-Focussed Learning Goal Structures (weak)	-0.08**	ns	ns	ns
Task-Focussed Learning Goal Structures	ns	ns	ns	ns
Emphasis on Academics	ns	ns	ns	ns
Student Relations	ns	ns	-0.11**	-0.07**
Student/Teacher Relations	ns	ns	ns	ns
Student Behavioural Norms	-0.06**	-0.05*	-0.11**	-0.10**
<i>Sense of School Membership</i>				
Teacher Support	---	-0.09**	---	-0.12**
Classmate Support	---	ns	---	ns
<i>Self-Esteem</i>				
	---	-0.13**	---	-0.20**
R <sup>2</sup> (Adj.)	0.40	0.42	0.27	0.32

\* p<.01  
\*\* p<.001  
n=2,403

**Table 6f**  
**OLS Regression of Academic and Behavioural Difficulties on**  
**Sense of School Membership, School Culture, and Self-Esteem**

<b>Predictor</b>	<b>Victimization</b>		<b>Risk-Taking</b>	
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 1</b>	<b>Model 2</b>
<i>Background Characteristics</i>				
Sex (female)	-0.18**	-0.20**	-0.14**	-0.15**
Age	ns	ns	ns	ns
Low (SES)	ns	ns	ns	ns
Missing (SES)	ns	ns	ns	ns
Family Stability	-0.08**	-0.06**	ns	ns
Family Social Support	-0.10**	ns	-0.07*	ns
Parental Autonomy Support	ns	ns	ns	ns
Parental Interest Child's Education	ns	ns	ns	ns
Parental Monitoring Child Activities	ns	ns	-0.09**	-0.08**
Peer Delinquency	0.15**	0.13**	0.24**	0.23**
Involvement in Community Activities	0.06*	0.05*	ns	ns
<i>School Culture</i>				
Ability-Focussed Learning Goal Structures (weak)	-0.11**	-0.07*	-0.09**	-0.07*
Task-Focussed Learning Goal Structures	-0.09**	-0.06*	ns	ns
Emphasis on Academics	ns	ns	ns	ns
Student Relations	-0.08**	ns	ns	ns
Student/Teacher Relations	ns	ns	ns	ns
Student Behavioural Norms	-0.18**	-0.17**	-0.07*	-0.07*
<i>Sense of School Membership</i>				
Teacher Support	---	ns	---	-0.08*
Classmate Support	---	-0.14**	---	ns
<i>Self-Esteem</i>				
	---	-0.13**	---	-0.08**
R <sup>2</sup> (Adj.)	0.24	0.28	0.19	0.20

\* p<.01  
\*\* p<.001  
n=2,403

**Table 6g**  
**OLS Regression of Academic and Behavioural Difficulties on**  
**Sense of School Membership, School Culture, and Self-Esteem**

<b>Predictor</b>	<b>Physiological Depression</b>		<b>Psychological Depression</b>	
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 1</b>	<b>Model 2</b>
<i>Background Characteristics</i>				
Sex (female)	0.18**	0.13**	0.22**	0.16**
Age	ns	ns	0.05*	0.06**
Low (SES)	0.06*	0.05*	ns	ns
Missing (SES)	ns	ns	ns	ns
Family Stability	ns	ns	ns	ns
Family Social Support	-0.17**	-0.09**	-0.18**	-0.09**
Parental Autonomy Support	ns	ns	-0.07*	ns
Parental Interest Child's Education	ns	ns	ns	ns
Parental Monitoring Child Activities	-0.06*	ns	ns	ns
Peer Delinquency	0.17**	0.14**	0.10**	0.06**
Involvement in Community Activities	ns	ns	0.06*	0.04*
<i>School Culture</i>				
Ability-Focussed Learning Goal Structures (weak)	-0.12**	ns	-0.08**	ns
Task-Focussed Learning Goal Structures	ns	ns	ns	ns
Emphasis on Academics	ns	ns	ns	ns
Student Relations	-0.06*	ns	-0.10**	ns
Student/Teacher Relations	ns	ns	0.09*	ns
Student Behavioural Norms	-0.06*	ns	ns	ns
<i>Sense of School Membership</i>				
Teacher Support	---	-0.07*	---	ns
Classmate Support	---	-0.10**	---	-0.15**
<i>Self-Esteem</i>				
	---	-0.35**	---	-0.44**
R <sup>2</sup> (Adj.)	0.20	0.34	0.17	0.38

\* p<.01  
\*\* p<.001  
n=2,403

**Table 6h**  
**OLS Regression of Academic and Behavioural Difficulties on**  
**Sense of School Membership, School Culture, and Self-Esteem**

<b>Predictor</b>	<b>Fear Negative Peer Evaluations</b>		<b>Social Avoidance Distress New Situations</b>	
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 1</b>	<b>Model 2</b>
<i>Background Characteristics</i>				
Sex (female)	0.14**	0.09**	0.08**	ns
Age	ns	ns	ns	ns
Low (SES)	ns	ns	ns	ns
Missing (SES)	ns	ns	ns	ns
Family Stability	0.05*	0.08**	ns	0.05*
Family Social Support	-0.09*	ns	ns	ns
Parental Autonomy Support	ns	ns	ns	ns
Parental Interest Child's Education	ns	0.07*	ns	ns
Parental Monitoring Child Activities	ns	0.05*	0.07*	0.08**
Peer Delinquency	ns	ns	ns	ns
Involvement in Community Activities	ns	ns	ns	ns
<i>School Culture</i>				
Ability-Focussed Learning Goal Structures (weak)	-0.07*	ns	ns	ns
Task-Focussed Learning Goal Structures	ns	ns	ns	ns
Emphasis on Academics	ns	ns	ns	ns
Student Relations	-0.21**	-0.12**	-0.16**	-0.10**
Student/Teacher Relations	0.14**	0.10**	0.08*	ns
Student Behavioural Norms	-0.08**	-0.06**	ns	ns
<i>Sense of School Membership</i>				
Teacher Support	---	ns	---	ns
Classmate Support	---	-0.23**	---	-0.17**
<i>Self-Esteem</i>				
	---	-0.41**	---	-0.26**
R <sup>2</sup> (Adj.)	0.08	0.31	0.03	0.13

\* p<.01  
\*\* p<.001  
n=2,403

**Table 6i**  
**OLS Regression of Academic and Behavioural Difficulties on**  
**Sense of School Membership, School Culture, and Self-Esteem**

<b>Predictor</b>	<b>Generalized Social</b>	
	<b>Avoidance and Distress</b>	
	<b>Model 1</b>	<b>Model 2</b>
<i>Background Characteristics</i>		
Sex (female)	ns	-0.08**
Age	ns	ns
Low (SES)	ns	ns
Missing (SES)	ns	ns
Family Stability	ns	ns
Family Social Support	-0.10**	ns
Parental Autonomy Support	ns	ns
Parental Interest Child's Education	-0.07*	ns
Parental Monitoring Child Activities	ns	ns
Peer Delinquency	ns	ns
Involvement in Community Activities	ns	ns
<i>School Culture</i>		
Ability-Focussed Learning Goal Structures (weak)	ns	ns
Task-Focussed Learning Goal Structures	-0.10**	-0.08*
Emphasis on Academics	ns	ns
Student Relations	-0.13**	ns
Student/Teacher Relations	0.13**	0.11**
Student Behavioural Norms	ns	ns
<i>Sense of School Membership</i>		
Teacher Support	---	---
Classmate Support	---	-0.23**
<i>Self-Esteem</i>		
	---	-0.23**
R <sup>2</sup> (Adj.)	0.04	0.16

\* p<.01  
\*\* p<.001  
n=2,403

## Results from SEM Models

Next, we estimated structural equation models for each of the student outcomes presented in Tables 6a-i. Given the large number of outcomes, findings for only half of the models are shown. A visual presentation of the results (i.e., pathways corresponding to our revised theoretical framework) can be found in Figures 9 through 17 at the end of this section. Model pathways (containing single-headed arrows) move from left to right and demonstrate how the effects of school culture are transmitted to effect change in student outcomes. For comparative purposes, only standardized structural path coefficients are shown. Statistical significance of estimated model parameters (structural coefficients) was judged using a two-tailed t-test derived by dividing the unstandardized coefficient by its standard error.<sup>15</sup>

Student outcomes were specified as latent endogenous constructs (dependent variables) each represented by two or more indicators (e.g., substance use was represented by frequency of alcohol, tobacco, and illicit drug use). The latent endogenous constructs of classmate support and teacher support (each represented by two or more indicators) were selected to represent sense of school membership. Six dimensions of school culture outlined in our revised theoretical framework were specified as latent exogenous constructs (independent variables not caused by any prior variables). Included in each model were dimensions identified as significant correlates of student outcomes in the OLS regression models. Exogenous controls (not shown) included respondent gender, age, low family SES, missing SES, family environment, peer delinquency, and frequency of involvement in community activities. Family environment was specified as a latent exogenous construct represented by five composite indices of stability, support, parental autonomy, parental monitoring of child activities, and parental interest in child's education.<sup>16</sup>

### *Substance Use*

Figure 9 presents results for the structural pathways linking school culture with student self-reports of substance use. Consistent with the general process of mediation described in our theoretical model, results showed that students who perceived weak school conformity to ability-focussed learning goal structures and quality student/teacher relationships at school were more likely than others to report a personal sense of teacher support. Feelings of teacher support in turn were associated with less frequent use of substances (alcohol, tobacco, and marijuana). Neither classmate support nor self-esteem served as mediating mechanisms linking school

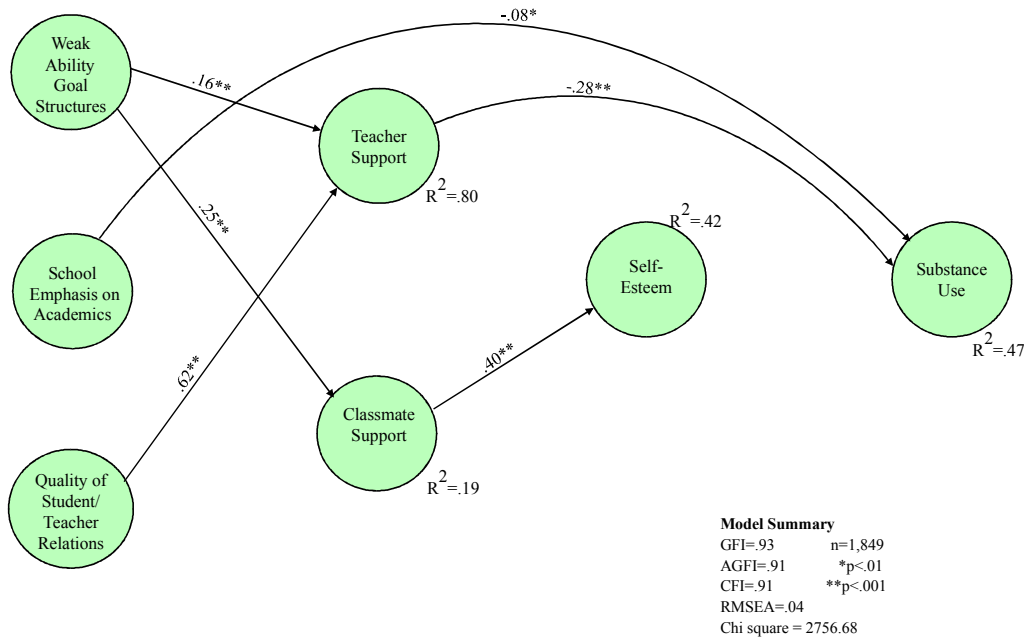
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<sup>15</sup>To set the metric for the latent constructs, one factor loading for each construct was constrained to equal one. Factor loadings on all single indicators were fixed to equal a value of one with the corresponding error term constrained to zero. Due to the large sample size and the possibility of dependence among observations within schools (intra-class correlations), only results significant at  $p < .01$  were reported. Missing cases were excluded based on the option of listwise deletion. For family socioeconomic status, a missing category containing 15 percent of sampled cases was modelled along side other controls as a separate dummy category measured without error. Model estimation procedures consisted of a two-stepped approach: the estimation of a saturated model (model with all structural paths) followed by the estimation of a second model with all non-significant structural paths eliminated (Newcomb & Bentler, 1988). Guided by theoretical considerations, Lagrange modification indices were used to identify previously constrained correlated error terms and error variance components that would improve the fit of the model (by relaxing the constraints and freely estimating these parameters).

<sup>16</sup>For the sake of parsimony and to satisfy the Baron and Kenny conditions for demonstrating mediation, only dimensions of school culture identified as having a unique relationship with a particular outcome in Tables 6a-i were retained in the structural equation model analysis (for that outcome). In each model, the same control variables were introduced.

culture to substance use. A direct negative relationship was observed between perceived school emphasis on academics and substance use. Goodness of fit statistics (e.g., AGFI=.91) indicated a reasonably good fitting model. Forty-seven percent of the variance in student substance use could be explained by perceived school culture, sense of school membership, and student demographic and other environmental influences (the latter not shown).<sup>17</sup>

Figure 9  
School Culture, Sense of School Membership  
and Substance Use



### Discipline and Truancy

Figures 10 and 11 present estimated model pathways for student self-reports of disciplinary referrals and truancy. Results revealed a striking similarity in the process of mediation for both outcomes. In each model, student perceptions of weak school conformity to ability-focused learning goal structures and perceptions of a strong school emphasis on academics were associated with enhanced feelings of teacher support which in turn were associated with reduced disciplinary referrals and truancy. Similar to Figure 9 (substance use), classmate support and self-esteem did not emerge as important mediators. In addition, direct negative relationships were observed between school emphasis on academics and each of the outcomes.

<sup>17</sup>Structural equation models also generate standardized estimates and associated standard errors for all direct, indirect, and total model effects. The total effect of a particular exogenous construct (independent variable) on an endogenous construct (dependent variable) is the sum of the direct and indirect effects. This decomposition of model relationships is particularly useful for evaluating mediational pathways. In Figure 9 the indirect effect of perceived school conformity to ability goal structures on self-reported substance use is obtained by multiplying the two path coefficients involving perceived teacher support (.16 X -.28=-.04). Since no direct pathway links ability goal structures to substance use, the total effect of this aspect of school culture is equivalent to the calculated indirect effect.

Figure 10  
School Culture, Sense of School Membership  
and Disciplinary Referrals

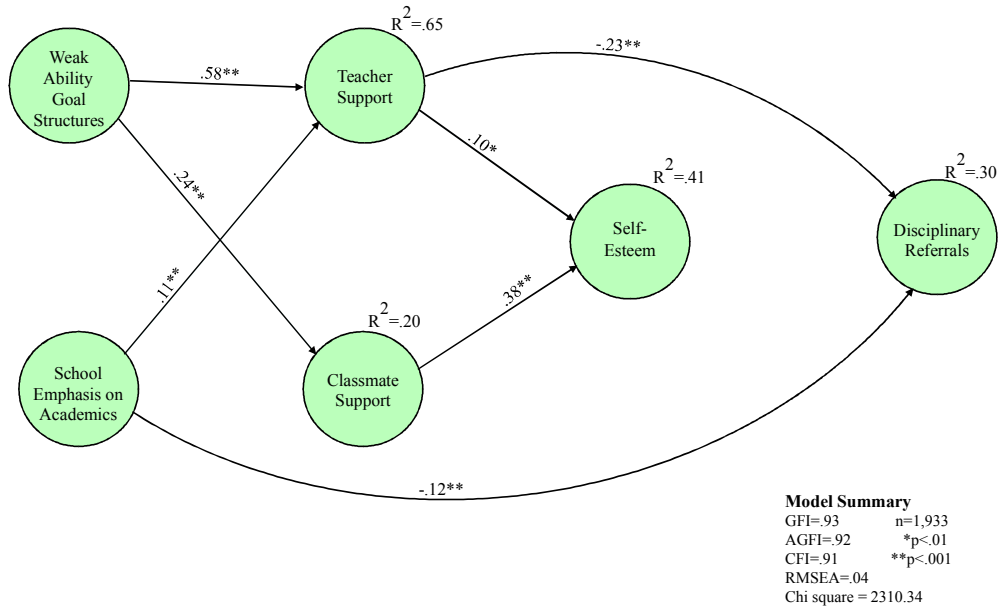
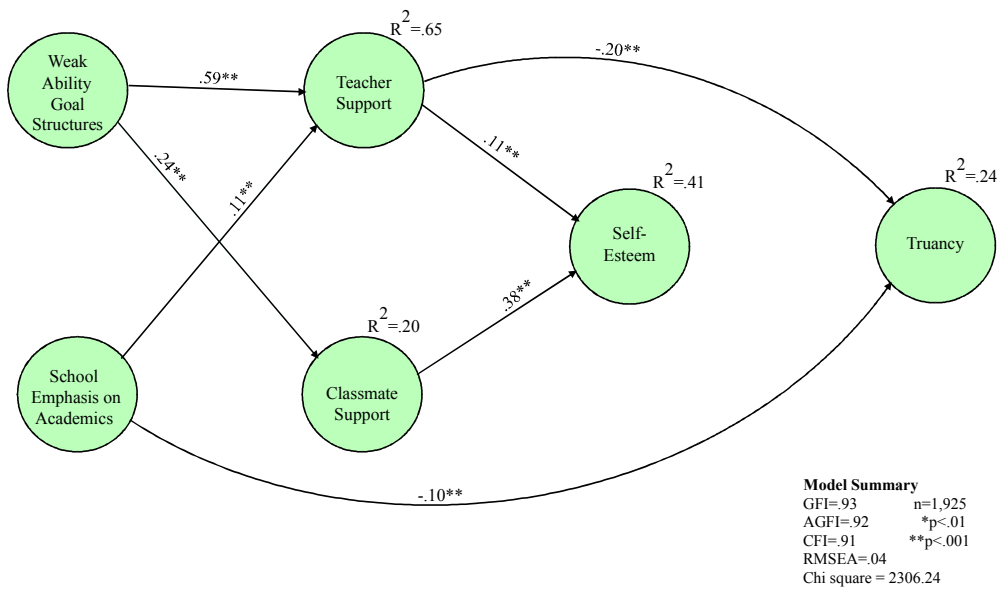


Figure 11  
School Culture, Sense of School Membership  
and Truancy



*Academic Achievement and School Conduct*

Consistent with our results in Tables 6a-i, student perceptions of weak school conformity to ability-focussed goal structures emerged as the only significant correlate of both academic achievement and school conduct problems. Figures 12 and 13 present the structural pathways linking this dimension of school culture to each outcome. Results revealed a strong positive relationship between weak school conformity and perceived teacher support with feelings of support positively related to academic achievement and negatively related to school conduct problems. In Figure 12, the effect of weak school conformity to ability-focussed goal structures on academic achievement was also transmitted indirectly through perceived classmate support and self-esteem. Specifically, students perceiving weak conformity were more likely than others to report personal feelings of classmate support. These feelings contributed to positive feelings of self-esteem that in turn were associated with stronger levels of academic performance. Interestingly, student feelings of classmate support (and not teacher support) operated as a strong positive correlate of self-esteem. This result was a constant feature in most of the estimated models.

Figure 12

School Culture, Sense of School Membership and Academic Achievement

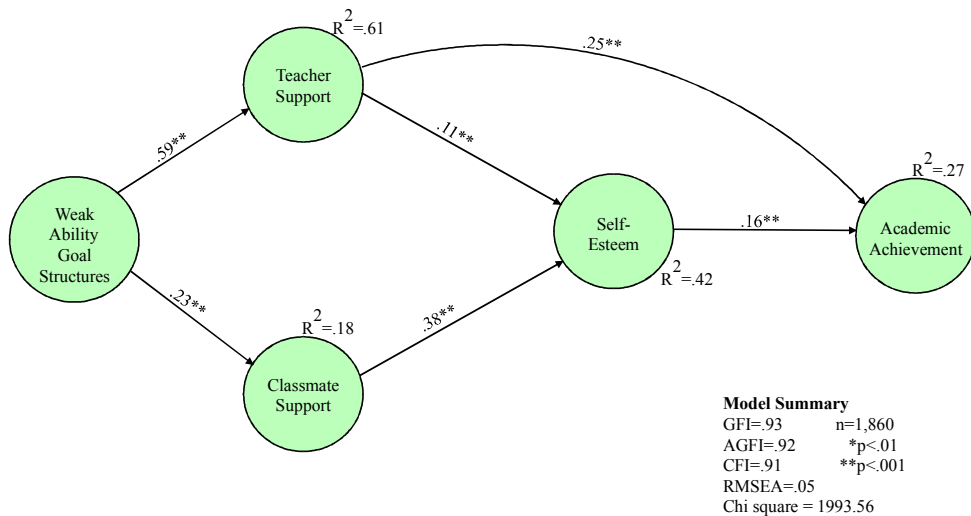
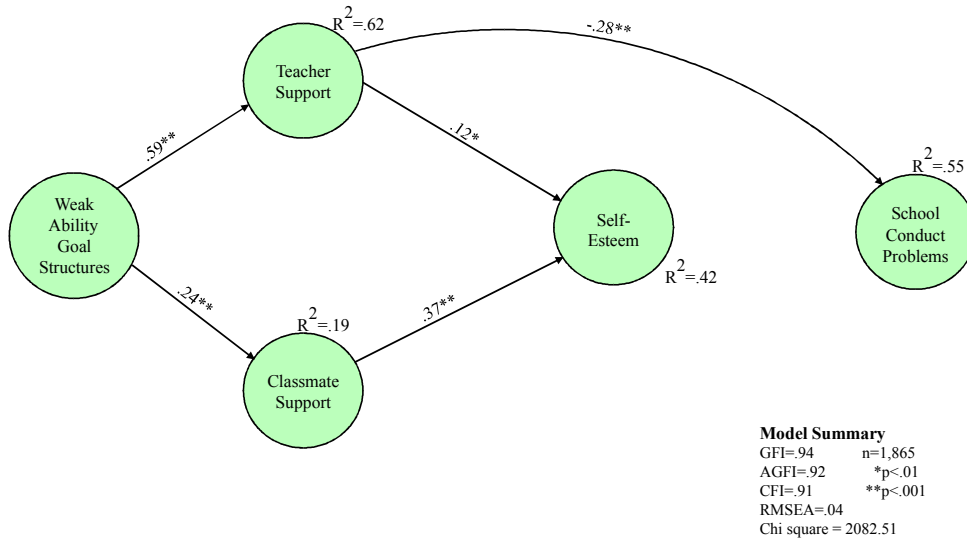


Figure 13  
School Culture, Sense of School Membership  
and School Conduct Problems

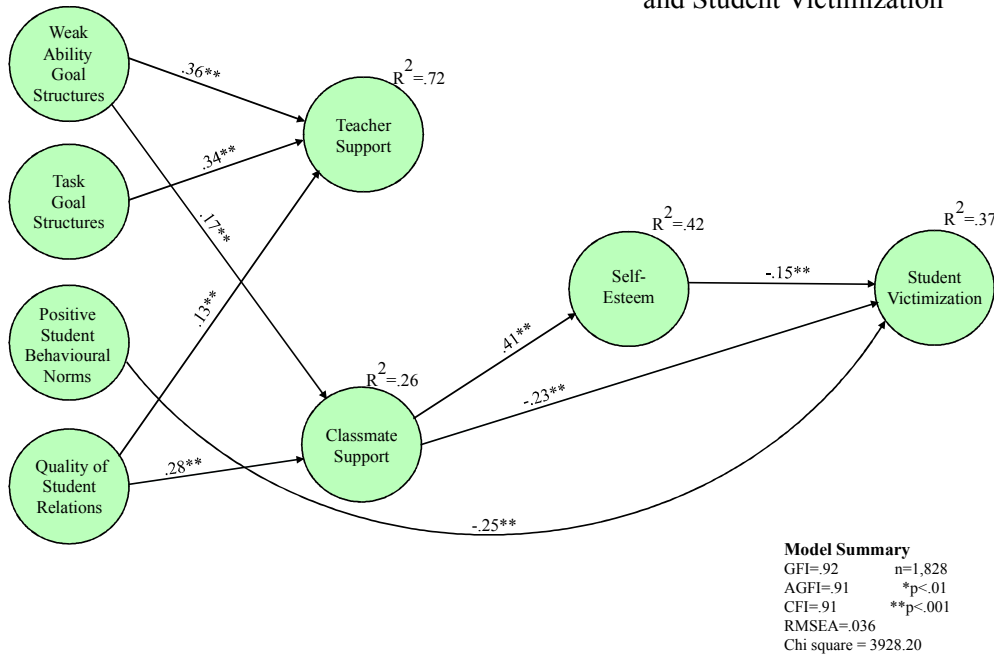


*Victimization at School*

Figure 14 presents structural pathways linking student perceptions of school culture to self-reports of victimization at school. Unlike previous models, personal feelings of classmate support emerged as a key mediating mechanism. Students who perceived weak school conformity to ability-focussed learning goal structures and quality student relations at school tended to express strong feelings of support from classmates which in turn were associated with reduced incidents of victimization. However, at least a portion of the beneficial effect of classmate support on victimization was achieved through enhancements in self-esteem. The effect of student perceptions of positive study body behavioural norms (e.g., little alcohol or drug use, theft, etc.) was not transmitted through sense of school membership or self-esteem but was directly associated with victimization (i.e., positive norms were associated with reduced incidents of victimization).

Figure 14

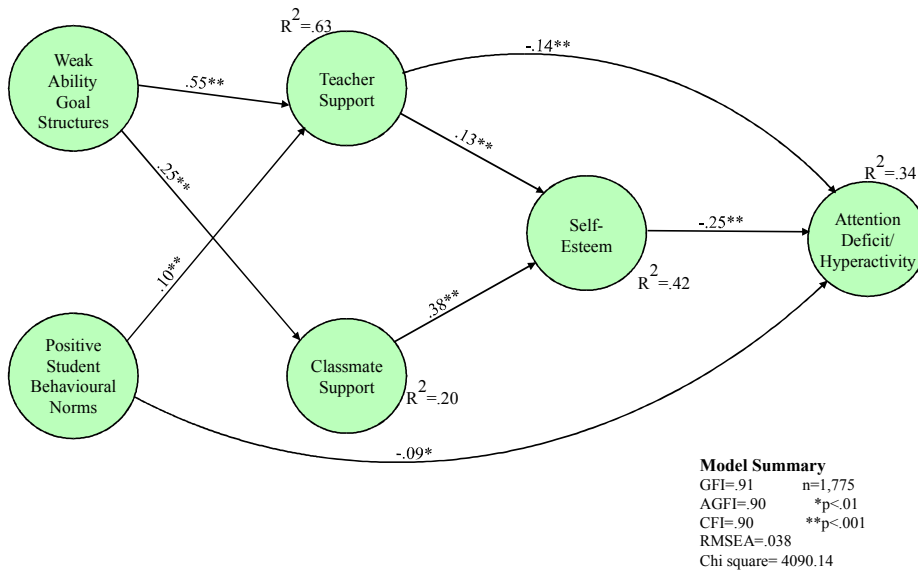
School Culture, Sense of School Membership and Student Victimization



*Externalizing Behavioural Disorders*

Similar structural pathways were identified linking student perceptions of school culture with two of the three child behavioural disorders (conduct disorder and attention deficit/hyperactivity). Results pertaining to attention deficit/hyperactivity are presented in Figure 15. Student feelings of teacher and classmate support served as important mediators linking perceptions of weak school conformity to ability-focussed learning goal structures with self-reported symptoms. Perceptions of weak school conformity served to increase feelings of teacher and classmate support. Feelings of teacher support in turn were associated with reduced symptoms both directly and indirectly through enhancements in self-esteem. In contrast, feelings of classmate support were associated with reduced symptoms in an indirect fashion only. Also found were direct negative relationships linking disorder symptoms with perceptions of positive student body behavioural norms. In contrast to our findings reported in Table 5, positive behavioural norms were positively associated with perceived teacher support.

Figure 15  
School Culture, Sense of School Membership  
and Attention Deficit/Hyperactivity



*Internalizing Behavioural Disorders*

Finally, structural pathways were estimated linking various facets of school culture with each of our five internalizing behavioural problem constructs. Results for two of these constructs (physiological depression and fear of negative peer evaluations) are presented in Figures 16 and 17 respectively. In general, perceptions of quality student relations at school and weak school conformity to ability-focussed goal structures were associated with reduced symptoms of depression and social anxiety through enhancements in personal feelings of classmate support (and more indirectly through the observed positive association between classmate support and self-esteem). Contrary to expectations, feelings of teacher support were associated with increased symptoms of psychological depression and social anxiety. Direct negative relationships were found between perceived quality of student relations and fear of negative peer evaluations and between quality of student relations and social avoidance and distress specific to new situations. In addition, perceptions of positive student behavioural norms were directly associated with reduced symptoms of physiological depression and fear of negative peer evaluations.

Figure 16  
School Culture, Sense of School Membership  
and Physiological Depression

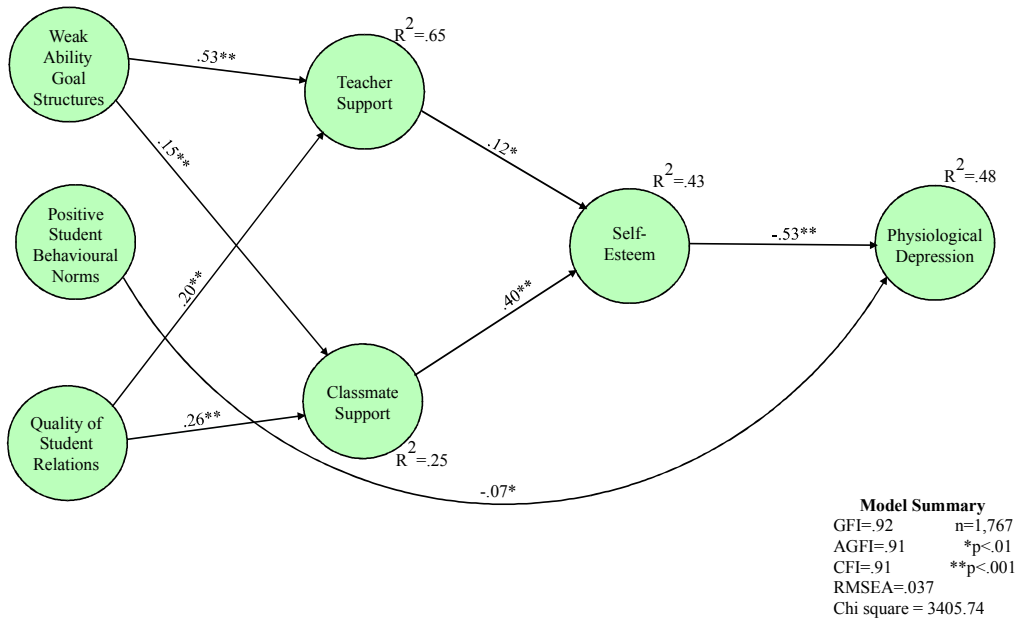
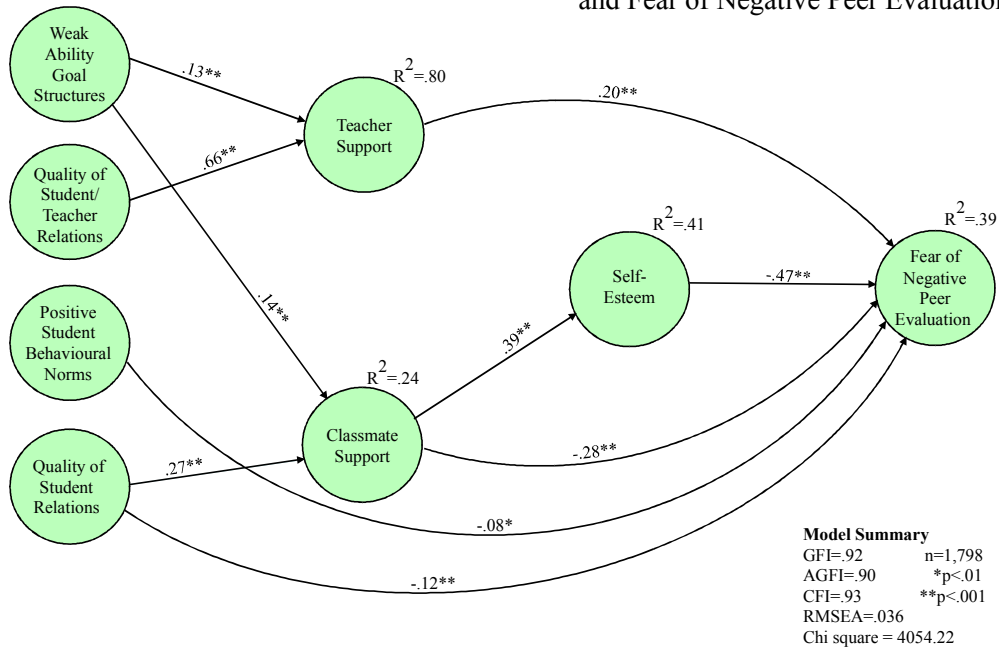


Figure 17  
School Culture, Sense of School Membership  
and Fear of Negative Peer Evaluation



## **Results from Multiple Group SEM Models**

A third objective of this report was to ascertain whether the pathways linking aspects of school culture with student sense of school membership and other psycho-social outcomes were similar for students belonging to different demographic and family backgrounds. To answer this question, SEM multiple group analyses were performed to assess if the results for the above models (estimated on the entire sample of students) were more or less the same for male versus female respondents and those who reported low vs. moderate-to-high levels of family functioning. Significant differences between groups in the magnitude of specific model parameters were evaluated using the critical ratio for differences option in AMOS (analogous to a *t* value).

Results for gender revealed a strong similarity in the general process of mediation for boys and girls. Specifically, the pathways linking dimensions of school culture to student academic and behavioural difficulties were nearly identical across gender categories in terms of the magnitude and direction of the estimated effects. However, a few notable exceptions emerged from the data. Boys who expressed positive feelings of self-esteem were found to perform better academically (compared to low self-esteem boys), experienced fewer incidents of victimization at school, and were less likely to exhibit symptoms of conduct disorder and generalized social avoidance and distress. In contrast, findings for girls revealed little or no relationship linking self-esteem with each of the outcomes. Similar gender differences were found in models involving oppositional disorder and attention-deficit/hyperactivity but did not reach statistical significance. Interestingly, expressions of positive self-esteem was an equally important factor for both boys and girls in terms of its association with reduced symptoms of depression and social anxiety (excluding generalized social avoidance and distress).

In general, minor differences were observed in the estimated model pathways for different levels of student family functioning. One exception involved individual perceptions of teacher support (one of our two sense of school membership constructs). Results revealed a moderate negative relationship between perceived teacher support and behavioural disorder symptoms (strong support associated with fewer symptoms) but primarily among students belonging to low functioning families. Also found was a significant positive relationship (unique to students from low functioning families) between perceptions of weak school conformity to ability-focused learning goal structures and individual perceptions of teacher support.

## **Summary of Regression and SEM Model Results**

### *Regression Results*

- Structural and normative aspects of school culture (as perceived by students) were identified as significant correlates of a variety of academic and behavioural outcomes. In general, favourable perceptions of culture were associated with increased academic performance and reduced behavioural problems (externalizing and internalizing). Favourable perceptions of culture were also uniquely associated with an enhanced personal sense of school membership based on feelings of teacher and classmate support.
- Peer group and family characteristics operated along side facets of school culture as significant predictors of sense of school membership as well as academic and behavioural

difficulties. Students immersed in delinquent peer groups experienced a diminished sense of school membership and were more likely to engage in risky behaviours. In contrast, students who reported moderate-to-strong family functioning were significantly less likely than others to experience problems. Family functioning also emerged as a consistent predictor of student sense of school membership. Students who reported moderate-to-strong family functioning were significantly more likely than others to express strong feelings of classmate and teacher support. Non-significant relationships were obtained for family socio-economic status.

- A portion of the beneficial effects of moderate-to-strong family functioning on sense of school membership was achieved indirectly. Specifically, strong family functioning served to enhance student feelings of teacher and classmate support by contributing to favourable impressions of school culture. Similar evidence of mediation was observed for delinquent peer group involvement. Peer group involvement was associated with weak teacher and classmate support through its negative association with perceived school culture.

### *SEM Model Results*

- For most outcomes, the beneficial effects of a favourable school culture were transmitted indirectly through sense of school membership and self-esteem. In other words, favourable student perceptions of school culture contributed to heightened feelings of school membership. Feelings of membership in turn were generally associated with increased academic performance and reduced behavioural problems either directly or indirectly through enhancements in self-esteem. These results provide moderate-to-strong support for our hypothesis identifying sense of school membership as a mediating mechanism linking student perceptions of school culture with academic and behavioural difficulties.
- The importance of each dimension of school culture in terms of its capacity for predicting student academic and behavioural difficulties depended on the outcome under consideration. For the most part, a different set of dimensions operated for each outcome. Despite this complexity, general consistencies in the pattern of estimated relationships were found.
- Weak school conformity to ability-focussed learning goal structures reduced the likelihood of externalizing behavioural problems (mostly in an indirect fashion) but was less visible in models involving social anxiety or depression. In contrast, perceived quality of student relations emerged as a strong negative correlate of internalizing problems. Specifically, higher quality relations were associated with reduced disorder symptoms either directly or indirectly through stronger perceptions of classmate support.
- Student perceptions of school learning goal structures (i.e., perceptions of weak school conformity to ability-focussed learning goals and heavy emphasis placed by the school on academics) were more strongly associated (in a positive fashion) with feelings of teacher versus classmate support. In contrast, student perceptions of the quality of student relations at school yielded stronger and more consistent positive relationships with perceived classmate support.
- Perceived classmate support was negatively associated with several student outcomes. Many of these consisted of internalizing behavioural problems (high classmate support associated with reduced symptoms). In contrast, direct negative relationships involving perceived

teacher support were mostly confined to externalizing problems as well as truancy, disciplinary referrals, and substance use. Contrary to our hypotheses, students who reported strong feelings of teacher support were more likely than others to report symptoms of psychological depression and social anxiety.

- Perceived support from classmates emerged as a strong correlate of feelings of self-esteem (strong support associated with high esteem). Less important in terms of bolstering self-esteem was perceived support from teachers.

### *Multiple Group SEM Results*

- Multiple group analyses revealed strong similarities across categories of gender and family functioning in the estimated pathways linking dimensions of school culture with student academic and behavioural difficulties. Unique to males was a positive relationship between self-esteem and academic performance (high levels of esteem associated with high levels of performance). Also unique to males were negative relationships between self-esteem and victimization as well as several externalizing behavioural problems (high levels of esteem associated with reduced victimization and problems). Perceived support from teachers emerged as a significant negative correlate of behavioural disorder symptoms primarily among students belonging to low functioning families.

### **Results from Multilevel Modelling**

As noted earlier, the application of structural equation models to analyse predictors of student-level outcomes has its shortcomings because students belonging to a particular school may share a number of attributes (i.e., attitudes, feelings, or behaviours) that make them fundamentally different from students attending other schools. This phenomenon violates the assumption of independence of observations in OLS regression techniques (including SEM modelling) possibly resulting in overly liberal tests of significance for estimated model parameters. However, it also suggests that at least a portion of the variation in individual-level student outcomes may be accounted for by between-school differences. If significant between-school differences are found, the task for the analyst is to identify what it is about the schools themselves that contribute to those differences.

A relatively new statistical technique, known as multilevel modelling, permits researchers interested in school-based research to simultaneously estimate the relative importance of school, family, and community-level variables along side individual-level variables in predicting student-level outcomes. Guided by our theoretical model, two key issues emerge. First, holding constant individual-level characteristics, does sense of school membership aggregated to the level of the school (including school culture, family environment, and peer group characteristics) help to predict between-school differences in student academic and behavioural functioning? Second, do student perceptions of school culture and other environmental characteristics aggregated to the level of the school predict between-school differences in individual sense of school membership?

Multilevel modelling techniques begin with the estimation of an unconditional model containing no predictor variables. This model is important in that it compares the proportion of variance on each student outcome that is within schools (level one) versus the proportion of variance between

schools (level two). The intra-class correlation (ICC) indicates the proportion of variance on each outcome contributed by between-school differences. An ICC of zero indicates a complete absence of differences. Results of our variance components analysis (presented in Table 7) revealed that only 7 student outcomes had ICCs greater than .03, generally considered the minimum requirement for conducting multilevel analyses. These included: disciplinary referrals, victimization, oppositional disorder, alcohol abuse, substance use, academic achievement (overall grade average), and sense of school membership–teacher support.<sup>18,19</sup>

School-level variables considered for inclusion in our level two models (see Table 8) were obtained from three sources: aggregated student-level data from the student questionnaires, school-level data from the school rater questionnaires, and community census tract information corresponding to the catchment areas of the participating schools. Predictors were selected on the basis of preliminary empirical analyses, theoretical significance, and demonstrated importance in previous empirical studies.<sup>20</sup> Our criteria for inclusion converged on a final set of level two school predictors that included: aggregate sense of school membership, aggregate perceptions of school culture, school appreciation and recognition of student achievement (assessed by school raters), aggregate perceptions of family socio-economic status, aggregate perceptions of family functioning, aggregate perceptions of peer delinquency, and community socio-economic status (based on census tract data). Model controls included: school size (total student enrollment), geographic location (northwest vs. central and southwest), ethno/linguistic status (Anglophone vs. Francophone school), governance structure (separate vs. public school sector), age and gender composition of teaching staff (percent ages 50 and over and percent male), and gender composition of student body (percent male). Prior to model entry, school-level predictors were centred about the grand mean.

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<sup>18</sup>Following the estimation of the variance components models, level one models containing individual-level predictors were constructed for outcomes with ICCs above .03. Given our interest in the effects of aggregate school and community-level characteristics, results for these models are not shown. Predictors were identical to those specified in our structural equation models and included gender (male), age, family socio-economic status (low), missing socio-economic status, family functioning, peer delinquency, involvement in community activities, self-esteem, school culture, and sense of school membership. For models predicting academic and behavioural outcomes, we chose to retain only those dimensions of school culture identified as significant correlates in the OLS regression equations presented earlier. Prior to model entry, all individual-level predictors were centred about their respective school means (Kreft, Leeuw, & Aiken, 1995).

<sup>19</sup>Before estimating the final level one models, preliminary analyses were conducted to determine if the relationships (slope parameters) between each of the two sense of school membership constructs and the 6 student-level academic/behavioural outcomes varied significantly across the 22 schools. This step constitutes a test of the “random slopes” assumption in multilevel modelling. Analyses using the likelihood ratio statistic (-2LL) indicated that models in which the slope parameters were fixed to zero provided a reasonable fit to the data that did not differ appreciably from models in which the slopes were allowed to randomly vary. Similar results were obtained for models specifying sense of school membership as the dependent variable. Based on these findings, we restricted our level two models to an examination of school-level predictors of between-school variation in intercepts.

<sup>20</sup>Since multilevel models do not generally accept low ratios of level two units (i.e., schools) to level two variables, a restricted number of predictors were included in our models. Analyses of the data were also conducted to identify highly collinear (redundant) variables (variables with a Pearson *r* value exceeding .70). High item inter-correlations were found among several census tract indicators of community socio-economic status (low education, low income, single parent family, unemployment, and rented dwelling). Principal components analyses of these indicators supported a single factor solution (Cronbach’s alpha=.79). Items were summed to form a factor composite of community SES for inclusion in the level two models. Based on a high Pearson *r* value of .88, we chose to combine into a single construct school appreciation and recognition of student achievement and school promotion of student activities/media through advertising and displays.

**Table 7**  
**Estimates of Within and Between School Variance**  
**For Student Outcome Measures (Variance Decomposition)**

Variable	Within School Variance	Between School Variance	ICC
<i>Academic and Behavioural Outcomes</i>			
Alcohol Abuse	6.48***	0.45**	0.07
Substance Use	8.30***	0.53**	0.06
Disciplinary Referrals	3.28***	0.33**	0.09
Truancy	3.38***	0.11*	0.03
Student Victimization	8.05***	0.49**	0.06
School Conduct Problems	1.22***	0.03 <sup>ns</sup>	0.02
Conduct Disorder	11.02***	0.28*	0.02
Attention Deficit/Hyperactivity	27.12***	0.37 <sup>ns</sup>	0.01
Oppositional Disorder	12.67***	1.01**	0.07
Academic Achievement (Overall Average)	0.86***	0.04**	0.04
Academic Achievement (Subject Areas)	0.84***	0.02*	0.03
Depression (Psychological)	38.22***	1.02*	0.03
Depression (Physiological)	29.40***	0.68*	0.02
Fear of Negative Peer Evaluation	50.26***	0.76*	0.01
Social Avoidance/Distress Specific to New Situations	14.44***	0.29*	0.02
Generalized Social Avoidance/Distress	8.81***	0.38**	0.04
Thrill-seeking	13.97***	0.31*	0.02
<i>Sense of School Membership</i>			
Classmate Support	6.90***	0.20**	0.03
Teacher Support	16.29***	2.02**	0.11

\*p<.05; \*\*p<.01; \*\*\*p<.001  
n=2,403; n=22 schools

**Table 8**  
**Descriptive Statistics: School and Community Variables (n=22)**

Variables	Mean	Standard Deviation	Min-Max
<b>School Structural Characteristics</b>			
Student Population	734.00	586.64	87-2500
Number of Teachers	47.64	33.43	11-150
Grade 9 Population	159.64	125.66	23-500
Number Grade 9 Teachers	18.90	11.19	4-48
Student/Teacher Ratio (All Grades)	14.31	2.97	7.25-18.87
Proportion Francophone Schools	0.23	---	---
Proportion Separate Schools	0.41	---	---
Proportion Region			
North	0.55	---	---
Central	0.18	---	---
East	0.00	---	---
Southwestern	0.27	---	---
Proportion Male Teachers	0.53	0.13	0.33-0.92
Proportion Teachers >Age 50	0.19	0.12	0.05-0.45
Proportion Teachers Masters Degree	0.10	0.08	0-0.35
<b>School Catchment Area Variables (Census tracts)</b>			
Proportion < High School education	0.11	0.05	0.01-0.19
Proportion Rent vs. Own Dwelling	0.26	0.14	0.04-0.64
Proportion Unemployment Rate	0.09	0.03	0.04-0.15
Proportion Family Income <30K	0.22	0.10	0.06-0.44
Proportion Single Parent Families	0.14	0.05	0.07-0.28
Proportion Changed Residence Past 5 Years	0.38	0.09	0.25-0.61
Proportion Non English-Speaking Mother Tongue	0.12	0.09	0.02-0.40
<b>School Rater Variables<sup>1</sup></b>			
Building Exterior/Grounds (R1)	6.68	1.73	1-8
Building Exterior/Grounds (R2)	6.59	2.06	0-8
Building Interior (R1)	15.45	2.79	9-20
Building Interior (R2)	13.96	4.57	0-20
Crowding (R1)	2.86	1.42	0-4
Crowding (R2)	2.82	1.59	0-4
Student Recognition (R1)	3.86	1.08	1-5
Student Recognition (R2)	3.77	1.41	0-5
Advertising/Displays (R1)	11.00	3.51	2-15
Advertising/Displays (R2)	10.55	4.33	1-17
Social Climate (R1)	5.77	1.45	1-7
Social Climate (R2)	5.64	1.56	0-7

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Variables	Mean	Standard Deviation	Min-Max
<b>Aggregated Student-Level Data</b>			
<i>Demographic and Socioeconomic Background Characteristics</i>			
Student Gender (Grade 9 Males)	0.48	0.08	0.38-0.70
Student Age	13.78	0.16	13.40-14.02
Total Family Socioeconomic Status (Index)	4.72	0.37	4.28-5.77
Number of Siblings (4 or more)	0.15	0.09	0.07-0.45
<High School Education (Father)	0.22	0.13	0.05-0.50
<High School Education (Mother)	0.17	0.10	0.05-0.38
Rent vs. Own Dwelling	0.16	0.11	0.03-0.50
Parental Unemployment	0.18	0.09	0.06-0.47
Total Family Functioning (Index)	7.01	0.72	5.84-9.29
Parental Autonomy Support	12.27	0.63	10.76-13.64
Family Social Support	12.80	1.05	9.76-14.47
Parental Interest Child's Education	5.35	0.35	4.87-6.13
Parental Monitoring Child Activities	4.38	0.32	3.67-4.92
Family Stability (Index)	4.89	0.32	4.41-6.08
Single Parent Families	0.31	0.11	0.18-0.69
3 or More Family Moves	0.16	0.11	0.03-0.56
3 or More School Changes	0.23	0.12	0.06-0.52
<2 Years Current Residence	0.19	0.08	0.06-0.40
Involvement in Community Activities	12.83	0.57	11.48-14.04
Peer Deviance	10.24	0.90	8.48-12.91
<i>School Culture</i>			
Quality of Student/Teacher Relations	9.81	1.09	7.10-11.44
Student Behavioural Norms	22.52	2.61	13.71-26.24
Quality of Student Relations	9.84	1.21	6.90-12.00
School Conformity Ability-Focussed Learning Goal Structures	12.68	1.52	8.24-15.38
School Conformity Task-Focussed Learning Goal Structures	13.09	1.21	11.01-14.80
Student Body Emphasis on Academics	8.62	0.85	6.90-10.18
School Emphasis on Academics	3.58	0.26	3.16-4.22
Total School Culture (Index)	9.80	1.71	4.79-12.43
<i>Sense of School Membership</i>			
Classmate Support	6.22	0.65	4.38-7.08
Teacher Support	14.65	1.64	11.05-17.73
Acceptance/Respect and Inclusion in Activities	14.99	1.14	11.81-16.91
Acceptance/Respect from Teachers	9.64	1.08	7.05-11.70
General Acceptance and Belonging	6.93	0.85	4.81-8.85
<i>Psychological and Behavioural Outcomes</i>			
Self-Esteem	12.33	0.87	9.86-13.58
Alcohol Abuse	5.57	0.74	4.58-6.95
Substance Use	6.48	0.83	5.48-8.53
Disciplinary Referrals	1.10	0.66	0.46-3.00
Truancy	0.82	0.42	0.10-1.45
Victimization	6.22	0.85	4.76-7.98

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Variables	Mean	Standard Deviation	Min-Max
<b>Aggregated Student-Level Data (continued)</b>			
<i>Psychological and Behavioural Outcomes (continued)</i>			
Academic Achievement (C average or less)	2.12	0.23	1.85-2.57
Academic Achievement (Below average in subject areas)	2.55	0.23	2.10-3.13
School Conduct Problems	3.73	0.26	3.14-4.27
Conduct Disorder	14.87	0.74	13.71-16.25
Oppositional Disorder	14.60	1.17	12.33-17.09
Attention Deficit/Hyperactivity	22.76	0.97	20.48-24.41
Physiological Depression	15.34	1.38	12.10-17.98
Psychological Depression	18.84	1.12	16.00-20.96
Fear of Negative Peer Evaluation	18.30	1.07	15.88-19.70
Social Avoidance/Distress Specific to New Situations	9.58	0.74	8.05-10.73
Generalized Social Avoidance/Distress	4.98	0.47	4.00-6.25
Thrill-seeking	13.93	0.82	12.48-15.47

<sup>1</sup>Note: R1 refers to Rater #1 and R2 refers to Rater #2

Because aggregate perceptions of school culture and sense of school membership were highly correlated ( $r=.80$ ), separate models were estimated for each construct.<sup>21</sup> Parameter estimates (unstandardized) were adjusted for individual-level predictors specified in the level one models as well as other level two predictors. Statistical significance of model parameters was calculated on the basis of a two-tailed t-test derived by dividing the unstandardized coefficient by its associated standard error. Model goodness-of-fit was judged according to the proportion of variation in student academic and behavioural functioning explained by school, family, peer, and community-level two predictors. Given the small number of level two units (i.e., schools), we set the type one error rate to  $p<.10$ . In order to maximize the number of students within each school, cases with missing values were assigned the group mean.

Tables 9a-f present the results of our level two predictors of between-school differences in student academic and behavioural outcomes. Excluded is our measure of school culture. Results revealed that student perceptions of sense of school membership (aggregated to the level of the school) were significant predictors of between-school variation for three of the six student outcomes. Specifically, schools in which students indicated strong feelings of teacher support utilized fewer disciplinary referrals for inappropriate behaviour ( $b=-.2090$ ,  $p<.05$ ) and experienced significantly fewer incidents of student victimization ( $b=-.3304$ ,  $p<.05$ ). Moreover, fewer symptoms of oppositional disorder were observed among schools in which students indicated strong feelings of classmate support ( $b=-1.6034$ ,  $p<.10$ ).

Between-school differences were also predicted by environmental assessments of school climate. Schools ranked by raters as high on appreciation and recognition of student achievement

<sup>21</sup>Aggregate sense of school membership and aggregate school culture were not included in the same model because of the high corresponding Pearson  $r$  value of .80. Highly related (collinear) variables are redundant and thus should not be entered as predictors in the same equation. Such a practice can lead to unstable parameter estimates.

(including promotion of student activities/media through advertising/displays) were less likely than others to utilize disciplinary referrals on a frequent basis ( $b=-.0466$ ,  $p<.001$ ) and experienced fewer symptoms of student oppositional disorder ( $b=-.0623$ ,  $p<.10$ ).

Other predictors of between-school differences were rooted in environmental domains overlapping with the context of the school. Increased incidents of victimization occurred in schools in which a high proportion of the student body reported involvement in delinquent peer groups ( $b=.5330$ ,  $p<.01$ ). Schools in which a high proportion of the student body ranked low on our index of family socio-economic status were more likely than others to experience student alcohol abuse ( $b=2.7786$ ,  $p<.10$ ). Contrary to expectations, neither aggregate perceptions of positive family functioning nor the socio-economic status of the community emerged as significant predictors in any of the models. Also non-significant were ratings of the physical appearance of the school interior and exterior, and grounds, school crowding, and residential instability of the surrounding catchment area.

Although not central to our study of the social and learning goal aspects of school culture, results pertaining to several structural indicators of school climate are worth noting. Contrary to expectations, significant negative relationships were obtained between school size and two of the six outcomes. Specifically, student self-reports of disciplinary referrals and incidents of victimization tended to be lower in schools with a large student enrolment. Also noteworthy was a significant positive relationship between disciplinary referrals and two demographic controls: the proportion of male grade 9 students and the proportion of teachers age 50 and older. That is, schools with a high proportion of male students and older staff members tended to have more disciplinary referrals. Schools situated in the north were slightly more likely than schools in other regions of the province to experience student substance use. Anglophone schools experienced fewer disciplinary referrals than Francophone schools but possessed greater symptoms of student oppositional disorder. Non-significant relationships were obtained for school sector (separate vs. public school).

Models were also estimated that included our composite index of school culture as a predictor variable in place of the two sense of school membership constructs. Results (not shown) generally revealed weak and non-significant effects. One exception was a significant negative relationship between favourable student perceptions of school culture and incidents of victimization. Specifically, victimization tended to be lower in schools in which students provided favourable perceptions of culture. Also found was an inverse relationship between perceived culture and self-reported substance use. However, the resulting estimate fell slightly short of meeting our criterion of  $p<.10$  for judging statistical significance.

Our last set of level two analyses examined the effects of student perceptions of school culture and other environmental influences (aggregated to the level of the school) on between-school differences in student sense of school membership. Given the low ICC value for classmate support reported in Table 7, only teacher support was examined. School culture was assessed on the basis of a single composite of six dimensions included in the level one models. First, a model excluding school culture was estimated (reduced model) followed by a model that contained all the predictors (full model).

Results (not shown) for the reduced model (excluding school culture) revealed higher levels of student sense of school membership for schools in which a large proportion of the grade 9

student body reported moderate-to-strong family functioning. In the full model this effect disappeared once school culture was added to the equation. Student feelings of teacher support were significantly higher for schools in which students provided favourable assessments of culture. These results suggest that schools characterized by supportive family environments tend to give rise to supportive school cultures which in turn contribute to enhanced student feelings of sense of school membership (teacher support). Other environmental constructs (e.g., environmental ratings of school climate, peer influences, and community socio-economic status) yielded non-significant effects.

**Table 9a**  
**Multilevel Model of School, Family, Peer Group and Community-Level Effects on Student Disciplinary Referrals: Level Two (Full) Model**

	Coefficient	Standard Error	<i>t</i> value
<b><i>Parameters (Fixed Effects)</i></b>			
<i>Between Schools</i>			
Grand Mean	2.6716	0.3821	6.99****
Percent Student Body Positive Family Functioning	-0.1341	0.1632	-0.82 <sup>ns</sup>
Percent Student Body Low Family SES	0.5945	0.5620	1.06 <sup>ns</sup>
Percent Student Body Peer Delinquency	0.0863	0.1035	0.83 <sup>ns</sup>
School Recognition of Student Achievement/Advertising of Student Activities	-0.0466	0.0114	-3.93***
Community Socioeconomic Status (Low)	0.4702	0.3520	1.34 <sup>ns</sup>
Sense of School Membership			
Teacher Support	-0.2090	0.0768	-2.72**
Classmate Support	0.6243	0.2558	2.44**
<b><i>Conditional Error Variance Components (Random Effects)</i></b>			
	<b>Variance</b>		<b>df</b>
Between Schools	0.0005	(0.015%)	6
Within Schools	2.5849	(99.98%)	2370
Total	2.5852	(100.0%)	
<b><i>Percent Reduction in Conditional Error Variance at School-level</i></b>	99.9%		
<b><i>Percent Reduction in Total Conditional Error Variance</i></b>	28.1%		

Note: Level Two predictors centered about the grand mean. Results adjusted for level one student characteristics and the following level two school characteristics: student enrollment, geographic location, ethnic/linguistic status (Anglophone vs. Francophone school), governance structure (public vs. separate school sector), and student and teacher demographics (age and gender).

\*p<.10; \*\* p<.05; \*\*\* p<.01; \*\*\*\* p<.001

**Table 9b**  
**Multilevel Model of School, Family, Peer Group and Community-Level Effects on**  
**Student Victimization: Level Two (Full) Model**

	Coefficient	Standard Error	<i>t</i> value
<b><i>Parameters (Fixed Effects)</i></b>			
<i>Between Schools</i>			
Grand Mean	6.8058	0.6384	10.66****
Percent Student Body Positive Family Functioning	0.3236	0.2658	1.22 <sup>ns</sup>
Percent Student Body Low Family SES	-0.3133	0.9658	-0.32 <sup>ns</sup>
Percent Student Body Peer Delinquency	0.5330	0.1708	3.12**
School Recognition of Student Achievement/Advertising of Student Activities	0.0294	0.0196	1.50 <sup>ns</sup>
Community Socioeconomic Status (Low)	-0.5622	0.5867	-0.96 <sup>ns</sup>
Sense of School Membership			
Teacher Support	-0.3304	0.1277	-2.59**
Classmate Support	0.3149	0.4218	0.75 <sup>ns</sup>
<b><i>Conditional Error Variance Components (Random Effects)</i></b>			
	<b>Variance</b>		<b>df</b>
Between Schools	0.0136	(0.2%)	6
Within Schools	6.0113	(9.8%)	2370
Total	6.0249	(100.0%)	
<b><i>Percent Reduction in Conditional Error Variance at School-level</i></b>	97.2%		
<b><i>Percent Reduction in Total Conditional Error Variance</i></b>	29.4%		

Note: Level Two predictors centered about the grand mean. Results adjusted for level one student characteristics and the following level two school characteristics: student enrollment, geographic location, ethnic/linguistic status (Anglophone vs. Francophone school), governance structure (public vs. separate school sector), and student and teacher demographics (age and gender).  
 \*p<.10; \*\* p<.05; \*\*\* p<.01; \*\*\*\* p<.001

**Table 9c**  
**Multilevel Model of School, Family, Peer Group and Community-Level Effects on**  
**Student Oppositional Disorder: Level Two (Full) Model**

	Coefficient	Standard Error	<i>t</i> value
<b><i>Parameters (Fixed Effects)</i></b>			
<i>Between Schools</i>			
Grand Mean	12.5494	0.8552	14.67****
Percent Student Body Positive Family Functioning	-0.2712	0.3464	-0.78 <sup>ns</sup>
Percent Student Body Low Family SES	2.0845	1.3217	1.58 <sup>ns</sup>
Percent Student Body Peer Delinquency	0.0554	0.2259	0.25 <sup>ns</sup>
School Recognition of Student Achievement/Advertising of Student Activities	-0.0623	0.0269	-2.31*
Community Socioeconomic Status (Low)	-0.9743	0.7827	-1.24 <sup>ns</sup>
Sense of School Membership			
Teacher Support	0.2596	0.1695	1.53 <sup>ns</sup>
Classmate Support	-1.6034	0.5559	-2.88**
<b><i>Conditional Error Variance Components (Random Effects)</i></b>			
	<b>Variance</b>		<b>df</b>
Between Schools	0.0458	(0.8%)	6
Within Schools	8.7899	(99.2%)	2370
Total	8.8357	(100.0%)	
<b><i>Percent Reduction in Conditional Error Variance at School-level</i></b>	95.5%		
<b><i>Percent Reduction in Total Conditional Error Variance</i></b>	35.4%		

Note: Level Two predictors centered about the grand mean. Results adjusted for level one student characteristics and the following level two school characteristics: student enrollment, geographic location, ethnic/linguistic status (Anglophone vs. Francophone school), governance structure (public vs. separate school sector), and student and teacher demographics (age and gender).

\*p<.10; \*\* p<.05; \*\*\* p<.01; \*\*\*\* p<.001

**Table 9d**  
**Multilevel Model of School, Family, Peer Group and Community-Level Effects on**  
**Student Alcohol Abuse: Level Two (Full) Model**

	Coefficient	Standard Error	<i>t</i> value
<b><i>Parameters (Fixed Effects)</i></b>			
<i>Between Schools</i>			
Grand Mean	6.4851	0.8513	7.62****
Percent Student Body Positive Family Functioning	0.1855	0.3235	0.57 <sup>ns</sup>
Percent Student Body Low Family SES	2.7786	1.3559	2.05*
Percent Student Body Peer Delinquency	0.2022	0.2189	0.92 <sup>ns</sup>
School Recognition of Student Achievement/Advertising of Student Activities	0.0337	0.0280	1.20 <sup>ns</sup>
Community Socioeconomic Status (Low)	-0.1445	0.7696	-0.19 <sup>ns</sup>
Sense of School Membership			
Teacher Support	0.1544	0.1636	0.94 <sup>ns</sup>
Classmate Support	0.9942	0.5293	-1.88 <sup>ns</sup>
<b><i>Conditional Error Variance Components (Random Effects)</i></b>			
	<b>Variance</b>		<b>df</b>
Between Schools	0.0855	(1.5%)	6
Within Schools	4.9987	(98.5%)	2370
Total	5.0842	(100.0%)	
<b><i>Percent Reduction in Conditional Error Variance at School-level</i></b>	82.9%		
<b><i>Percent Reduction in Total Conditional Error Variance</i></b>	26.4%		

Note: Level Two predictors centered about the grand mean. Results adjusted for level one student characteristics and the following level two school characteristics: student enrollment, geographic location (north, central, southwest), ethnic/linguistic status (Anglophone vs. Francophone school), governance structure (public vs. separate school sector), and student and teacher demographics (age and gender).  
 \*p<.10; \*\* p<.05; \*\*\* p<.01; \*\*\*\* p<.001

**Table 9e**  
**Multilevel Model of School, Family, Peer Group and Community-Level Effects on**  
**Student Substance Use: Level Two (Full) Model**

	Coefficient	Standard Error	<i>t</i> value
<b><i>Parameters (Fixed Effects)</i></b>			
Between Schools			
Grand Mean	6.2989	1.3825	4.56****
Percent Student Body Positive Family Functioning	-0.1611	0.4924	-0.33 <sup>ns</sup>
Percent Student Body Low Family SES	2.1215	2.2356	0.95 <sup>ns</sup>
Percent Student Body Peer Delinquency	0.2495	0.3470	0.72 <sup>ns</sup>
School Recognition of Student Achievement/Advertising of Student Activities	0.0467	0.0465	1.00 <sup>ns</sup>
Community Socioeconomic Status (Low)	-0.5340	1.2335	-0.43 <sup>ns</sup>
Sense of School Membership			
Teacher Support	0.0089	0.2556	0.03 <sup>ns</sup>
Classmate Support	-0.6803	0.8185	0.83 <sup>ns</sup>
<b><i>Conditional Error Variance Components (Random Effects)</i></b>			
	<b>Variance</b>		<b>df</b>
Between Schools	0.3070	(4.6%)	6
Within Schools	5.7554	(95.4%)	2370
Total	6.0624	(100.0%)	
<b><i>Percent Reduction in Conditional Error Variance at School-level</i></b>	47.7%		
<b><i>Percent Reduction in Total Conditional Error Variance</i></b>	31.1%		

Note: Level Two predictors centered about the grand mean. Results adjusted for level one student characteristics and the following level two school characteristics: student enrollment, geographic location (north, central, southwest), ethnic/linguistic status (Anglophone vs. Francophone school), governance structure (public vs. separate school sector), and student and teacher demographics (age and gender).  
 \*p<.10; \*\* p<.05; \*\*\* p<.01; \*\*\*\* p<.001

**Table 9f**  
**Multilevel Model of School, Family, Peer Group and Community-Level Effects on Student Academic Performance: Level Two (Full) Model**

	Coefficient	Standard Error	<i>t</i> value
<b><i>Parameters (Fixed Effects)</i></b>			
<i>Between Schools</i>			
Grand Mean	2.6980	0.3891	6.93****
Percent Student Body Positive Family Functioning	0.0450	0.1428	0.32 <sup>ns</sup>
Percent Student Body Low Family SES	-0.0650	0.6256	-0.10 <sup>ns</sup>
Percent Student Body Peer Delinquency	0.0723	0.0987	0.73 <sup>ns</sup>
School Recognition of Student Achievement/Advertising of Student Activities	-0.0155	0.0130	-1.19 <sup>ns</sup>
Community Socioeconomic Status (Low)	0.3017	0.3493	0.86 <sup>ns</sup>
Sense of School Membership			
Teacher Support	-0.0251	0.0733	0.34 <sup>ns</sup>
Classmate Support	-0.0058	0.2358	0.02 <sup>ns</sup>
<b><i>Conditional Error Variance Components (Random Effects)</i></b>			
	<b>Variance</b>		<b>df</b>
Between Schools	0.0215	(2.8%)	6
Within Schools	0.7104	(97.2%)	2370
Total	0.7314	(100.0%)	
<b><i>Percent Reduction in Conditional Error Variance at School-level</i></b>	46.0%		
<b><i>Percent Reduction in Total Conditional Error Variance</i></b>	18.0%		

Note: Level Two predictors centered about the grand mean. Results adjusted for level one student characteristics and the following level two school characteristics: student enrollment, geographic location (north, central, southwest), ethnic/linguistic status (Anglophone vs. Francophone school), governance structure (public vs. separate school sector), and student and teacher demographics (age and gender).  
 \*p<.10; \*\* p<.05; \*\*\* p<.01; \*\*\*\* p<.001

## Summary of Multilevel Models

- Sense of school membership based on feelings of classmate and teacher support (aggregated to the level of the school) emerged as a significant predictor of between-school variation in student behaviour. Specifically, self-reported disciplinary referrals and incidents of victimization tended to be lower in schools where the grade 9 students as a whole perceived high levels of teacher support. Fewer symptoms of oppositional disorder occurred in schools high on perceived classmate support.
- Schools for which students as a whole tended to provide favourable assessments of culture were less likely to experience incidents of victimization. However, school culture did not emerge as a significant predictor of between-school variation for any of the other outcomes. Other aggregate predictors of student behaviour consisted of environmental ratings of school climate as well as factors rooted in environmental domains (i.e., peer groups) overlapping with the context of the school. Particularly noteworthy was our finding of reduced behavioural problems (i.e., symptoms of oppositional disorder and disciplinary referrals) among schools ranked highly by independent raters on appreciation and recognition of student achievement. In addition, incidents of student victimization were significantly higher in schools in which a large proportion of students indicated involvement in delinquent peer groups.
- Schools with a large proportion of grade 9 students from families low on socioeconomic status tended to suffer from symptoms of student alcohol abuse. Contrary to expectations, aggregate family functioning, aggregate community poverty (based on our composite of census tract indicators), and aggregate residential instability (also based on census tract data) did not emerge as significant predictors of between-school variation in student academic performance or behaviour. The latter variable (residential instability) was excluded from the final set of models based on preliminary analyses of the data. Preliminary analyses also revealed non-significant relationships involving ratings of school crowding, the physical appearance of the school interior, the building exterior, and the school grounds. These variables were excluded from the final set of analyses.
- Structural aspects of the school environment emerged as significant predictors of student behaviour. Unexpectedly, large schools (based on total student enrolment) were less likely than smaller schools to experience student disciplinary referrals and incidents of student victimization. Disciplinary referrals were higher in Francophone schools, schools in which a large proportion of staff were near retirement age, and schools with a high proportion of male grade 9 students. Symptoms of student oppositional disorder tended to be higher in Anglophone schools. Student self-reports of substance use were higher in schools situated in the north. The inclusion of school sector (separate vs. public) generally resulted in non-significant relationships.
- Schools in which students provided favourable assessments of culture benefited from a strong sense of school membership involving individual feelings of teacher support. Also benefiting were schools enrolling students high on family functioning. These effects disappeared once school culture was added to the equations evidence that supportive family environments at the level of the school contribute to between-school variation in individual feelings of teacher support by raising aggregate perceptions of school culture.

## CONCLUSIONS

### Summary of Findings

In recent years advocates of school reform have identified schools not only as centers of intellectual training but as social systems capable of exerting a powerful influence on the developmental and learning outcomes of students (Quellmalz & Knapp, 1995). This shift in thinking arose in response to a number of research studies on “effective schools” conducted in the decades of the 1970s and 80s that revealed strong engagement in school life (including reduced truancy, delinquency and other problem behaviours) among students exposed to socially cohesive and caring school cultures. Unfortunately, since the advent of the effective school studies, few theoretical frameworks have been offered to explain how students benefit from exposure to positive school cultures. As noted in the introduction of this report, the development and implementation of sound ecological school-based programs depends on a thorough understanding of the processes or mechanisms linking culture with student outcomes and the conditions under which those processes occur.

To answer the question of process, this study subscribed to a theory of student engagement in school life broadly referred to as the Schools as Communities perspective. Emphasis was placed on the psychological environment of the school as perceived by students and how these perceptions influenced their attitudes and behaviour. Aspects of school culture were grouped conceptually under three broad dimensions believed to be necessary for instilling in students a strong sense of school membership. These included a favourable social climate, goal structures focussed on task-focussed learning goals (vs. ability-focussed learning goals) as well as a strong academic orientation, and positive student behavioural norms. Young people exposed to a favourable culture were hypothesized to develop a strong sense of school membership based on individual feelings of classmate and teacher support. A strong sense of school membership in turn was believed to reduce the likelihood of academic and behavioural problems both directly and indirectly by increasing self-esteem.

### *Regression, SEM and Multiple Group Models*

In accordance with the “Schools as Communities Perspective”, several aspects of school culture were generally associated with positive changes in student academic performance and behaviour. Results from our structural equation models revealed that the effects of these cultural constructs on student outcomes were largely achieved indirectly by enhancing feelings of support derived from classmates and teachers thereby reducing the likelihood of academic and behavioural difficulties. A portion of the influence of sense of school membership was also mediated by individual self-esteem. Specifically, students who perceived strong classmate support tended to possess a positive self-image that in turn lessened their involvement in a variety of problem behaviours.

We predicted that exposure to a nurturing and supportive school environment (defined by close interpersonal relations between staff and students) would be associated with positive academic and behavioural functioning by instilling in students a sense of school membership. Consistent with this reasoning, results showed that students who perceived supportive, trusting, and respectful relationships among other students at school reported fewer symptoms of oppositional disorder and internalizing behavioural problems (i.e., depression and social anxiety). For the

most part, these beneficial effects were achieved indirectly through individual expressions of classmate support and increases in self-esteem. Social anxiety, however, was also affected directly with perceptions of high quality student relations associated with fewer symptoms. Although speculative, one explanation for this finding suggests that students immersed in supportive school cultures feel a sense of security about their surroundings that serves to alleviate stress and tension. Another attributes the lower anxiety levels to the acquisition of social skills made possible by contexts that encourage pro-social behaviour (Kasen, Johnson & Cohen, 1990).

Contrary to expectations, weak and non-significant relationships were found between perceptions of respective and caring student/teacher relationships at school and most externalizing behavioural problems. In contrast, perceptions of quality student/teacher relationships were associated with increased symptoms of depression and social anxiety. Similar findings were made by Kasen and colleagues who found that students who characterized the social climate of their school in terms of mutual assistance and support and open discussions surrounding emotional and family problems were more likely to exhibit symptoms of depression and anxiety (Kasen et al., 1990). They hypothesized that school environments that facilitate communication with sympathetic others may actually foster a heightened sense of awareness of personal feelings and fears, a potential risk factor for psychopathology. An alternative explanation suggests that students who perceive warm and respectful relationships between students and teachers at school tend to be those who are unpopular among their peers. Thus, it is the felt rejection by peers among this group (as opposed to some aspect of their relationship with teachers) that contributes to feelings of anxiousness and depressed mood. Unfortunately, the measure used in the Kasen et al. study to gauge social climate did not distinguish between teachers and students as “sympathetic others”. In the current study, the social climate of the school was separated into two components giving rise to very different relationships.

Institutional learning goal structures were identified as an important correlate of several academic and behavioural outcomes, evidence that students are cognisant not only of the interpersonal relations that comprise the social climate of their school but the environmental norms that define successful learning. Students who perceived minimal school emphasis on learning goal structures stressing relative ability, social comparison, and competition in the evaluation and assessment of student performance (i.e., weak ability-focussed goal structures) reported strong feelings of teacher support. Feelings of teacher support in turn were associated with fewer behavioural problems. In contrast, perceptions of a strong school emphasis on task-focussed goal structures (i.e., a focus on understanding, effort, improvement and mastery of material) did not emerge as a significant correlate of most outcomes. Exceptions included significant relationships between perceived task goals and fewer incidents of victimization and symptoms of general social avoidance and distress. This latter result (i.e., task-related) may reflect certain developmental changes during early adolescence (e.g., increased capacity for abstract thought and raised self-consciousness) that minimize the influence of task goals by heightening student’s awareness of their academic abilities and social popularity vis-a-vis their peers. Roeser and colleagues’ study of eighth grader perceptions of institutional learning goals found that an emphasis on task-focussed goal structures (and not ability goal structures) successfully predicted academic performance by raising individual sense of school belonging (Roeser et al., 1996).

Other institutional learning goals consisted of student perceptions of the degree of emphasis placed by the school on academics. This aspect of school culture was directly associated with reduced substance use, disciplinary referrals, and truancy (and indirectly through its positive association with feelings of teacher support). However, it did not emerge as a significant predictor of academic achievement or other behavioural outcomes. What accounts for these rather modest effects is unclear. Evidence suggests that too much emphasis on academics may lead to student feelings of anxiety and tension and stifle creativity and motivation to achieve if it occurs in an environment that lacks adequate social supports (Moos, 1987; Shouse, 1996). An excessive emphasis on academic pursuits could also be tied to the use of goal structures counterproductive to successful student outcomes (Tanzer, 1989). A British study of school environment found that schools with an extreme emphasis on academic achievement (defined as student success on examinations) were more inclined to adopt reproductive and competitive approaches to student learning while those with a moderate stress on achievement focused on an active search for understanding (Ramsden, Martin, & Bowden, 1989). Finally, the measure of academic emphasis adopted in this study excluded more objective indicators such as the amount of homework assigned weekly, teacher consistency in returning homework in a timely fashion, and time spent in academic versus non-academic classes. Limited evidence suggests that some of these indicators may be important predictors of improvements in student academic performance (Harnisch, 1987; Lee & Bryk, 1989).

Student expectations for positive student behavioural norms at school (e.g., at this school there is very little cheating, physical fighting, alcohol or drug use, truancy, verbal abuse) tended not to be associated with individual perceptions of sense of school membership but were related to several behavioural and mental health outcomes. In a direct fashion, perceptions of positive behavioural norms were associated with reduced incidents of victimization, fewer symptoms of oppositional disorder and attention-deficit/hyperactivity and fewer symptoms of depression and social anxiety. One interpretation of these direct pathways suggests that prolonged exposure to environmental risks can lead to increased student concerns for personal safety and erode student confidence in the ability of the school administration to maintain social control. Students faced with these harsh circumstances may respond by disengaging from school, carrying weapons for protection, or resorting to violence to resolve arguments (McNeal, 1997; Welsh et al., 1999). Assuming that individuals behave in a manner consistent with their perceptions (Pearson & Toby, 1991), our findings indicate that an orderly school culture is an important determinant of student's healthy academic and social functioning.

Our treatment of sense of school membership as a multidimensional construct (comprised of teacher and classmate support) provided new insights into the extent to which different types of caring and social support protect young people against risky or harmful behaviours. Previous studies have treated sense of school membership as a unitary construct (e.g., Battistich & Hom, 1997; Resnick et al., 1997) possibly obscuring unique differences in the direction and strength of relationships between its different facets and various academic and behavioural outcomes. In our work, strong feelings of teacher support at school were directly associated with reduced externalizing behavioural problems as well as lower rates of substance use, truancy, and disciplinary referrals. Recent Canadian studies have identified perceived teacher support as a strong negative correlate of academic and behavioural difficulties and a mitigating factor against the potentially harmful effects of children's exposure to environmental risk factors (Connolly, Hatchette, & McMaster, 1998; Jenkins & Keating, 1998). However, perceived teacher support was also associated with increased internalizing problems, notably, symptoms of depression and

social anxiety. As suggested earlier, this latter finding may reflect a certain amount of peer rejection experienced by students who report feeling a close connection to their teachers. It could also signify a reversed causal pathway to the extent that students suffering from symptoms of psychopathology attract the attention of sympathetic teachers or actively seek out the support of teachers as a means of alleviating their fears or assuaging feelings of depression. Future analyses carried out on the longitudinal study data will help to clarify the direction of these relationships.

Perceived support from classmates was not associated with reduced levels of substance use, disciplinary referrals or truancy but did contribute to better academic performance and lower symptoms of externalizing behavioural problems by enhancing individual feelings of self-esteem. Consistent with previous research findings (Rigby, 2000), having supportive classmates was directly associated with less victimization at school and fewer symptoms of internalizing behavioural problems (both depression and social anxiety). Unexpectedly, self-esteem played a minor role in accounting for the beneficial effects associated with teacher support. Although speculative, this result might be explained by the level of importance adolescents attach to peers versus teachers as providers of informal support. Students are unlikely to respond favourably to social support from teachers if they do not value that support or recognize it as important for their psychological well being. This is a neglected aspect of the social support literature but one that is crucial to understand in order to motivate low-support students to recognize a diversity of support providers and to seek their help (Rosenfeld, Richman, & Bowen, 1998). Finally, it is quite possible that perceptions of teacher and classmate support operate through different (but related) mechanisms to achieve positive student outcomes. For instance, while perceived support from teachers may be ineffective in enhancing student feelings of global self-worth, it may be a strong contributing factor to the value they attach toward school, their involvement in extra-curricular school activities, their commitment to learning, or their perceptions of academic competence or self-efficacy.

Multiple group analyses revealed that the general process of mediation implied by our theoretical model was similar for students from different demographic and family backgrounds. This is an important finding in that it suggests that the introduction of intervention programs aimed at changing the social ecology of the school may be equally effective for all students. However, a few notable exceptions did emerge from our data. Boys who expressed positive feelings of self-esteem were found to perform better academically, experienced fewer incidents of victimization at school, and were less likely to exhibit symptoms of conduct disorder and general social avoidance and distress. In contrast, findings for girls revealed weak and non-significant relationships. Interestingly, a positive self-esteem was an equally important factor for both boys and girls in terms of its association with reduced symptoms of depression and two of the three dimensions of social anxiety. These results may reflect gender differences in the importance boys and girls attach to various components that comprise adolescent identity. Previous research has shown that self-esteem for girls is global in nature while for boys it is differentiated according to the expectations placed on scholastic performance and behaviour at school and the self that develops in response to peer evaluations of physical appearance and social competencies (Bolognini et al., 1996).

Results also revealed a moderate negative relationship between perceived teacher support and behavioural disorder symptoms (strong support associated with fewer symptoms) but primarily among students belonging to low functioning families. Also found was a significant positive relationship (unique to students from low functioning families) between perceptions of weak

school conformity to ability learning goal structures and individual perceptions of teacher support. Although limited in scope, both findings demonstrate that at least some positive aspects of school culture may provide a protective influence for disadvantaged youth possibly by compensating for the absence of those qualities in other environmental domains (Battistich et al., 1995).

Family environment, in particular family functioning, operated along side school culture as a significant predictor of student sense of school membership and academic and behavioural functioning. Students belonging to stable, highly supportive families in which parents actively monitored their whereabouts and maintained an active interest in their education reported strong feelings of teacher support and were less likely than students in less favourable circumstances to experience academic difficulties, disciplinary referrals, and a range of problem behaviours. Students high on family functioning were also less likely to report symptoms of depression but more likely to report symptoms of social anxiety (fear of negative evaluation from peers and social avoidance and distress specific to new situations). While counterintuitive, this latter finding could reflect over-protectiveness on the part of parents who place severe constraints on the range of activities their children engage in both within and outside the home. An overprotective parent has been identified as a key risk factor for the onset of childhood social anxiety (Bruch, 1989). Family SES did not contribute to individual feelings of sense of school membership but was related to several behavioural outcomes. For example, students belonging to families low on socio-economic status displayed a greater tendency than moderate to high SES students to perform poorly academically, use substances (alcohol, tobacco, illicit drugs), abuse alcohol, and receive disciplinary referrals for inappropriate behaviour.

The unique influence of the psychological aspects of family environment on student's sense of school membership and academic and behavioural functioning strongly suggests that positive family attitudes, supportive relationships, and parental supervision at home are important motivating factors for children to succeed in school. Indeed, at least one study found that up until the age of 14, family contextual factors out-surpassed school contextual factors as salient predictors of children's school performance (Coleman & Hoffer, 1987). Unfortunately, research has also documented a steady decline from elementary to secondary school in the extent to which teachers and principals involve parents in the education of their children (Dornbusch & Ritter, 1988). Sanders & Epstein (1998) acknowledge that building strong home and school ties at the secondary level may be a difficult task because it involves changing deeply entrenched attitudes and long-standing practices held by parents and school officials. However, they believe that positive change is possible if educators and parents develop partnerships guided by a clear framework for involvement and a team approach for action.

In addition to family environment, student involvement in delinquent peer groups (e.g., friends' involvement in theft, vandalism, drug use) was strongly predictive of sense of school membership and most behavioural outcomes including self-reported symptoms of depression. Specifically, students who reported associations with delinquent peers displayed a diminished sense of school membership and were at increased risk of experiencing academic and behavioural difficulties. Whether peer delinquency temporally precedes or follows individual sense of school membership cannot be answered with these cross-sectional data. In our models peer delinquency was treated as an exogenous (independent) construct overlapping (and hence freely correlating) with the culture of the school and the family environment. This decision was based in part on the premise that delinquent peer cultures transcend the culture of the school

since the decision to associate with delinquent youth may have little to do with experiences at school and because many deviant group activities occur outside of school grounds. However, reversed causal pathways are also plausible such that students who feel rejected by their peers and classmates at school gradually develop peer countercultures with anti-achievement attitudes that in turn lead to poor academic performance and other behavioural problems (Battistich et al., 1995). This question of temporal ordering will be examined in greater detail in future analyses of the longitudinal study data.

Finally, student involvement in structured community activities not required by the school (e.g., membership in youth organizations, attendance of religious services, lessons in art, music, and dance, and volunteer work) was associated with feelings of teacher support, slightly higher levels of academic performance, and lower levels of substance use. However, involvement was not related to most other outcomes and in some instances contributed to a worsening of problems (e.g., increased incidents of victimization at school and slightly elevated symptoms of psychological depression). Prominent developmental psychologists (e.g., Larson, 2000) have theorized that structured extra-curricular activities should lead to positive youth development (e.g., social competence and enhanced self-esteem) because participants experience elements of initiative (i.e., intrinsic motivation, concentration, and sustained engagement over time) generally lacking in other types of leisurely pursuits. Others attribute the positive impact of structured activities to skill acquisitions and connections to conventional social support networks (Masten & Coatsworth, 1998). Our findings neither support nor refute these theories. Instead, we suggest that the potential benefits of extra-curricular activities may depend on the voluntary nature of involvement or the type of activity. Some research shows that children pressured by their parents to participate in structured community activities, especially three or more different weekly activities, may be at greater risk of poor mental health than those choosing to do so voluntarily. It is also possible that some types of structured activities provide greater opportunities for conflict to occur because of lax adult supervision or an absence of clearly defined rules governing appropriate behaviour.

### *Multilevel Models*

The results of our regression and structural equation models confirmed the importance of individual perceptions of sense of school membership and school culture as factors promoting strong academic performance and reducing harmful behaviours (including symptoms of anxiety and depression). Our multilevel models addressed an important but often neglected question in the literature on school environment, namely, to what extent are observed between-school differences in student academic performance and behaviour explained by between-school differences in sense of school membership and perceived school culture?

Consistent with the Schools as Communities Perspective, sense of school membership aggregated to the level of the school emerged as a key predictor of several student outcomes. Controlling for within-school differences in individual student background characteristics and sense of school membership (perceived teacher and classmate support), results revealed that higher levels of perceived teacher support aggregated to the level of the school were associated with significantly fewer incidents of victimization and disciplinary referrals for inappropriate behaviour. Symptoms of oppositional disorder were also significantly lower in schools classified as high on perceived classmate support. However, high levels of school classmate support were associated with increased reports of disciplinary referrals. This latter finding is difficult to

explain but may be attributed to the low between-school differences in perceived classmate support observed earlier. It is also possible that social contexts that offer too much support from fellow classmates may be counterproductive by encouraging or reinforcing disruptive behaviour. Contrary to expectations, favourable student perceptions of school culture aggregated to the level of the school emerged as a relatively unimportant predictor of student behaviour. An exception was the significantly lower self-reports of victimization in schools perceived by students as having a favourable culture.

Perhaps the most impressive finding to emerge from our multilevel models involved the rating of two environmental constructs: the level of emphasis placed by schools on appreciating and recognising students for academic and social achievements and the degree to which schools advertised and promoted student activities and media. Students enrolled in schools that ranked high on an index comprised of these two constructs were less likely than others to report disciplinary referrals and symptoms of oppositional disorder. Michael Rutter and colleagues made a similar finding in their study of 12 London England high schools. They found positive student attitudes and behaviour and better overall academic performance in schools that frequently praised students in public for their work (in classrooms and assemblies), that prominently displayed student work on walls, and that regularly awarded prizes for excellence in sports and academics (Rutter et al., 1979). Some scholars have attributed the beneficial effects of student recognition to the public nature of the rewards arguing that public recognition enhances positive peer group attitudes toward learning which in turn motivates students to strive for higher grades (Hallinger & Murphy, 1986).

Our finding of significant negative relationships between school size and student disciplinary referrals, victimization, and symptoms of oppositional disorder (i.e., that large schools experience fewer problems) is puzzling. One plausible explanation suggests that larger school sizes create efficiencies (lower average per pupil expenditures) because resources are spread out over a wider pupil base (Bryk et al., 1990). This frees up additional resources that may be allocated toward the purchase of new instructional materials, increased security, technological support (computers), and a diversity of academic programs to meet specialized student needs. A second possibility suggests that attending large schools affords students a higher degree of anonymity that may serve to reduce victimization or behavioural problems by allowing them to successfully avoid high conflict situations (Welsh et al., 1999). A third (albeit more limited) explanation supports the idea that some outcomes, for example, disciplinary referrals, may be as much a reflection of school or board policies as the actual incidence of behavioural problems. This may mean that larger schools do not necessarily have fewer behavioural problems but simply that they are less able (or willing) than smaller schools to resort to disciplinary referrals as a means of social control. Our results are consistent with those reported in a study of student misconduct in 11 US middle schools (Welsh et al., 1999). Using multilevel modelling, the authors found a marginally significant negative relationship between school size and misconduct. Interestingly, three out of the four indicators selected to tap misconduct captured the school's response to student misbehaviour and not the behaviour itself.

Although previous studies have identified reduced levels of school disorder and higher levels of academic achievement among students attending Catholic schools (in comparison to those attending public schools) (Bryk & Thum, 1989; Coleman & Hoffer, 1987; Lee & Bryk, 1989; Wehlage et al., 1989), similar effects were not observed here. What accounts for the near absence of a Catholic school effect is unclear. Some scholars have demonstrated that the

apparent success of Catholic schools can be attributed to environmental characteristics internal to the school such as a greater emphasis on academic pursuits, the administration of effective disciplinary practices, and a more communal and supportive atmosphere (Lee & Bryk, 1989). Others credit external factors. Coleman and Hoffer (1987) note that since Catholic children often attend the same parish as their school classmates, there is more social and face-to-face interaction across generational lines giving rise to a form of social capital that is consistent with the goals and values of the school. Evidence from a recent US study of school drop out (Teachman, Paasch, & Carver, 1996) seems to support this idea. The study found that Catholic parents were more likely than non-Catholic parents to cultivate close ties with their child's school and that Catholic children experienced significantly fewer school changes. When added to their multivariate models, these social capital indicators eliminated what was initially a negative relationship between Catholic school attendance and early drop out. Social capital (reflected in number of school changes) was also captured in our study, a factor that could have resulted in a similar process.

In contrast to the social and normative aspects of the school setting, school rater assessments of the general physical condition of the school exterior and school grounds and the level of crowding inside the school building were generally not related to variations in student academic and behavioural functioning. This finding suggests that positive student outcomes are possible even in schools that are crowded and in need of repair. Unfortunately, previous studies of school climate have generally neglected to measure the physical environment and therefore offer little in the way of comparative data. Typically, student outcomes have been modelled as a function of proxy measures of the condition of the physical plant such as the age of the building or ancillary space (space used for purposes other than classroom instruction) (Hellman & Beaton, 1986; Rutter et al., 1979). However, these measures have not yielded significant results. In some instances, environmental quality has been incorrectly inferred from resource availability. For example, Harnisch (1987) in his analysis of student academic achievement based on data from the High School and Beyond Study rated the quality of school facilities according to the presence or absence of facility resources (e.g., career centre, cafeteria, indoor lounge) as opposed to actual condition.

Although structural aspects of family environment aggregated to the level of the school (e.g., family socio-economic status) have been known to influence student academic and behavioural functioning, less attention has been devoted toward aggregate level family processes including level of parental supervision, parental provision of academic and emotional supports, and promotion of independent decision-making (for an exception, see Rumberger, 1995). Marjoribanks (1982) warns that failure to control for the variation between schools in the social and psychological aspects of family context risks exaggerating the effects of school environment on student attitudes and behaviour. We found that differences in levels of family functioning across schools did not emerge as a strong predictor of student behaviour. However, high levels of family functioning were associated with increased feelings of teacher support. This effect weakened once aggregate perceptions of school culture were added to the model, evidence that positive family functioning (at the aggregate or school-level) serves to enhance feelings of sense of school membership in an indirect fashion by increasing favourable perceptions of culture.

As noted earlier, the extent to which students enrolled in the same school share a common set of beliefs, attitudes, and behaviours may be attributed not only to the culture of the school but to the transmission of peer norms and values favouring drug use, anti-achievement attitudes, and

delinquent behaviour. Consistent with this reasoning, results from our multilevel models revealed that schools positioned high on our index of delinquent peer group involvement also experienced significantly higher rates of student victimization. However, aggregate peer delinquency did not predict any of the other five student outcomes.

Because schools are imbedded in communities, student outcomes may also reflect the influence of broader macro-level forces. Neighbourhood characteristics such as poverty and local crime may impact student academic performance and behaviour through changes in social characteristics (e.g., readiness to learn), exposure to risky situations in the vicinity of the school, the importation of norms favouring or discouraging violence, and the weakening of important social controls on children's behaviour (e.g., neighbourhood social cohesion) (Welsh, 2000). Contrary to this reasoning, we found weak and non-significant relationships between community socio-economic status and each of the six student outcomes. Similar weak or non-significant effects of community poverty have been reported in studies of student drug use and delinquency (Battistich & Hom, 1997), victimization (Battistich & Hom, 1997; Gottfredson & Gottfredson, 1985), and school misconduct (Welsh, Greene, & Jenkins, 1999). Non-significant effects were also obtained for our measure of community residential stability, a somewhat surprising result in light of evidence linking geographic mobility to adolescent academic and behavioural difficulties and the disruptive effects of mobility on family ties to school and community (Hagan, MacMillan, & Wheaton, 1996).

The poor performance of our community measures in predicting student outcomes may have been due to the exclusion of aggregate measures of community crime. In some jurisdictions, community crime rates (violent offences and property crime) have surpassed the effects of school environment as a predictor of student suspensions (Hellman & Beaton, 1986). Secondly, our use of census tract data provided a rough approximation of local neighbourhood conditions because many of the census tracts encompassed areas that extended beyond the catchment area boundaries of the participating schools. In other instances, school catchment areas were simply too large to accurately describe local neighbourhoods. Affected schools were typically located in rural areas that relied heavily on bussing programs and in the north where it was not uncommon for students residing in remote regions to temporarily board with a family in the local community in order to attend classes. These problems made it impossible to distinguish whether school disorder was a reflection of the importation of harmful behavioural norms from more distant locales or a particular feature of the local environment (Welsh, Greene, & Jenkins, 1999).

### **Limitations of Report**

Several facets of school culture were not examined in this report that may prove to be important predictors of sense of school membership. Evidence suggests a high probability of student behavioural problems and disengagement from school (including school drop out) when students perceive a lack of clarity and fairness and rigidity in school rules and incompatibilities in how school staff administer disciplinary action (Finn & Voelkl, 1993; Rumberger, 1995; Rutter et al., 1979; Wehlage & Rutter, 1986; Welsh, 2000). Mayer and colleagues related three indicators of harsh and punitive school disciplinary practices (i.e., absence of clarity, lack of consistency and follow-through, and inappropriate use of reinforcers and punishers) to incidents of school vandalism. A significant positive relationship was found only when all three components were combined (Mayer, Nafpaktitis, Butterworth, & Hollingsworth, 1987). These results caution against the use of single indicators to capture the disciplinary environment of the school.

Advocates of the Schools As Communities perspective assert that governance practices allowing for student input in the formulation of school policies and classroom rules enhance student feelings of belonging because it reminds them that they are important and valued members of the school community. However, empirical evidence regarding the importance of student autonomy has been mixed (Kasen et al., 1990; Welsh, 2000). One explanation suggests that despite a growing desire for autonomy, early adolescents may not be at a stage of developmental maturity necessary for managing the responsibilities associated with important decision-making roles. They are also unlikely to be active participants in decision-making matters at home leaving them poorly prepared to function in other environments that offer these privileges. Student autonomy may also be a difficult construct to measure because it requires disentangling the skill development aspect (i.e., the idea that more involvement over school decision-making will help students to function in unsupervised environments) from the control aspect (i.e., the idea that lax boundaries and management of behaviour will serve to worsen behavioural problems) (Kasen et al., 1990). Finally, the conflicting results might reflect the setting chosen to gauge the effects of student autonomy. It is conceivable that students benefit more from autonomy when they are in a structured classroom environment under the watchful eye of a teacher and less so in the broader school environment where social controls are more difficult to enforce.

This report also excluded student perceptions of parental involvement at school. Prior evidence regarding the importance of this variable as a potential source of environmental influence has been mixed and mostly confined to studies of student academic performance (Purkey & Smith, 1983). Moles (1987) has argued that parental involvement at school does not automatically signify an effective organizational climate since contact with the school is usually initiated by parents and because parents from lower socio-economic backgrounds are less actively involved in school affairs. In a study comparing the social and organizational attributes of effective schools, Hallinger and Murphy (1986) found that parents of students attending schools that were low on socio-economic status had minimal involvement in school life and were seldom engaged by principals. In contrast, parents whose children attended schools high on socio-economic status were highly involved and expected principals to play an active role in sustaining institutional ties to the community. Methodological factors may also account for some of the discrepant findings. Rumberger (1995), in a study of middle school drop out, reported that students of parents actively involved at school were much less likely to drop out than other students. Parental involvement, however, was assessed from both the standpoint of students and parents and consisted of a composite of items tapping volunteer work, attendance of school meetings and events, membership in parent-teacher organizations, and parent contacts regarding child academic performance and program. These results suggest that student reports alone may not be sufficient to accurately describe some aspects of school culture.

Student opportunities for social integration remains a relatively unexplored area in the school culture literature and to the best of our knowledge has not been directly examined as a possible contributor to the “belonging” aspect of sense of school membership. Catalano and colleagues speculate that the availability of bonding opportunities in the school environment may operate as an important protective factor for adolescent risk-taking behaviour by enhancing social integration and feelings of belonging and by buffering the negative effects of school-related stressors (Catalano et al., 1996). Only one study has made a direct link between school bonding opportunities and student attachment to school (McBride et al., 1995). Results revealed that aggregate level bonding among 12<sup>th</sup> grade students (measured according to the proportion of

students heavily involved in clubs/sports, highly attached to school, and committed to pro-social norms) was instrumental in raising 9<sup>th</sup> grade student commitment to school and involvement in pro-social activities. Interestingly, involved and committed 9<sup>th</sup> grade students were less likely than other students to engage in risky behaviour (defined as frequent binge drinking).

Finally, student involvement in extra-curricular school activities represents a potentially powerful predictor of academic and behavioural functioning at school. Unfortunately, this variable was excluded from our multivariate analysis because many students had not had sufficient time to enrol in activities by the administration of the baseline survey. Some writers have described student-initiated participatory behaviour in classroom and extra-curricular activities as the highest form of engagement in school life and therefore a necessary precondition for the development of a strong psychological sense of school membership (e.g., Finn & Voelkl, 1993; Finn, 1989). More recently, Voelkl (1994) posited a reversed causal pathway suggesting that children who feel comfortable in school (i.e., those who feel accepted by their classmates and teachers) eventually increase their involvement in school-related activities leading to stronger academic performance and reduced behavioural problems. Her study of over 13,000 eighth graders found that student participation at school mediated the positive relationship between perceptions of teacher warmth and academic achievement. Future analyses of our data (based on the second and third waves of data collection) will test for similar pathways by treating student involvement in extra-curricular activities as the end stage of engagement temporally positioned between sense of school membership and student behaviour.

Although this report identified potentially “modifiable” mechanisms linking student perceptions of school culture with various behavioural and mental health outcomes, several methodological limitations are worth noting. First, results were based entirely on cross-sectional data limiting our ability to make sound causal inferences. Within schools, students most likely to report feeling dissatisfied with their environment may be those who already have a long history of behavioural problems (Maughan, 1988). Between schools, differences in student outcomes may reflect differences in the characteristics of student populations at the time of admission and thus reflect a continuation of previous behavioural patterns rather than an effect brought on by the context of the school (Kasen et al., 1990). School environmental conditions are also subject to change even over short intervals of time possibly resulting from staff turnover, new organizational practices and policies (Thomas, Sammons, Mortimore, & Smees, 1997; Willms & Raudenbush, 1989), or developmental changes in student perceptions of their surroundings (Talbert & McLaughlin, 1999). These methodological problems are partially solved through the use of longitudinal designs involving the same cohort of students (enrolled in the same schools) followed over several years. Designs of this kind enable researchers to assess the extent to which changes in aspects of school culture and environment affect changes in student outcomes and the pathways through which those changes occur.

Other limitations pertained to our somewhat restricted focus on student perceptions as a means of assessing school culture and sense of school membership at the exclusion of the opinions and views of other groups, most notably principals and teachers. Surveying the opinions of these additional groups is important as some elements of school culture (e.g., teacher morale, sense of satisfaction and self-efficacy) tend to fall outside the range of direct student observation but nevertheless exert a powerful influence on academic and behavioural outcomes. Students, teachers, and principals may also provide very different descriptions of the quality and functioning of school life even for facets that are readily observable to each. Large perceptual

differences could signal the presence of deep-rooted systemic problems (e.g., breakdowns in communication) and therefore should be taken into account when developing school-based ecological programs. These complexities argue against a monolithic view of the school community. Student educational experiences occur within multiple imbedded contexts beginning with the classroom and extending outward to broader environmental influences such as teacher cultures, the culture or ethos of the school, organizational policies and practices, and characteristics of the parent community (Talbert & McLaughlin, 1999).

Our multilevel model results revealed that for the entire sample of students ( $n=2,403$ ) only a small percentage of the variation in student sense of school membership and selected academic and behavioural outcomes (generally between 5 and 10 percent) could be attributed to between-school differences. These low estimates of between-school variability (a test of the random intercepts assumption) are significant in that school-level effects on student outcomes are assessed only on the proportion of variance that is between schools. Similar findings have been made in several other studies examining school culture influences on student behaviour (Battistich et al., 1997; Mok & McDonald, 1994; Rumberger, 1995; Tanzer, 1989; Welsh, Greene, & Jenkins, 1999).

What accounts for the low between-school variability observed in our study is difficult to explain. One possibility is that the sample of 22 schools did not adequately reflect the full distribution of student attitudes and behaviours in the total student population. Alternatively, it could be that the sample was sufficiently representative of all schools leading one to conclude that variation in outcomes was considerably greater between students attending the same school than between students attending different schools. Another factor contributing to the low between-school variability may be tied to the measurement properties of our scales. Some authors have suggested that because the vast majority of school culture/climate instruments are designed for use on individuals, they may not be sensitive enough to detect differences at the organizational level (Bryk et al., 1990; Mok & McDonald, 1994). Our results could also be an artefact of the timing of the collection of our baseline data. Because we first surveyed grade 9 students shortly after entry into high school (on average 3 to 4 months since the first week of school), individual perceptions of environment may not have had enough time to firmly crystallize. Epstein (1981) found that students expressed strong reactions to school life only after long-term exposure to their environment. When environmental exposure was minimal, reactions had a less noticeable impact on attitudes and behaviour.

Finally, we found little or no evidence to support the “random slopes” assumption in multilevel modelling. In other words, the magnitude of the observed relationships between sense of school membership and each of the 6 student academic and behavioural outcomes did not vary appreciably across schools. This is an important finding in that it suggests that ecological intervention programs that have been proven effective in enhancing personal feelings of sense of school membership ought to work equally well across a variety of school settings.

### **Recommendations for Program and Policy Development**

Before proceeding with a list of study recommendations, a few general comments are in order. First, it is important to recognize that ecological programs emphasize the modification of contextual factors in children’s home, school, and community environments as a means of preventing academic and behavioural difficulties and poor mental health. This sets them apart

from traditional preventive efforts where the focus has been primarily on the individual student. Unfortunately, the broad focus of these programs requires the implementation of multiple intervention components that may present considerable costs to schools in both human and monetary terms. Without the support of government and community organizations, such programs have little or no chance of success. Second, the intent of this report is not to “preach” to schools what they should or should not do in terms of steps to improve the learning environment of young people. In fact, much of what schools already practice or do, particularly at the elementary level, is consistent in some manner with many of our program and policy recommendations. Our goal instead is to provide empirically driven information that will help educators identify areas where they might improve. Our recommendations also draw on the successes of programs currently operating in other jurisdictions. In the United States, ecological school-based programs have been in existence for some time including the School Development Program (Haynes, Comer, & Hamilton-Lee, 1988), the Child Development Project (Battistich et al., 1998), the Seattle Social Development Project (Catalano et al., 1996; Hawkins, Catalano, Kosterman, Abbott, & Hill, 1999), and The School Transitional Environment Project (Felner et al., 1993). Recent outcome evaluations of these efforts have yielded promising results in the areas of school belonging and commitment, mental health, and academic performance. Last, the cross-sectional nature of the data in this report limits our ability to make sound causal inferences regarding the effects of school culture and sense of school membership on various aspects of student functioning. Until the arrival of the longitudinal data, recommendations pertaining to policy and program development must therefore remain tentative. With these comments in mind, we offer the following recommendations for program and policy development:

- Strong teacher support at the individual-level (one or our two measures of sense of school membership) was consistently associated with better academic achievement and reduced behavioural problems. Nevertheless, nearly one in every three students in our study reported a lack of trust in their teachers. To address this problem and to promote more positive teacher/student relationships in general, schools are encouraged to introduce or strengthen existing programs that provide students and teachers increased opportunities to meet and interact with one another on an informal basis. This might be achieved through an expansion of teacher led extra-curricular-activities, school-wide “game days” or “fun fairs”, or teacher advisory programs that involve home form teachers working closely with school guidance counsellors to identify and counsel students in need of assistance (Felner et al., 1993).
- While our data generally support the establishment of closer student/teacher relations, it must be acknowledged that when confronted with personal problems, many adolescents seek the advice and help of other students (Cowie & Sharp, 1996). The reason for this pattern of help seeking is not fully understood. It is possible that students fail to recognize teachers as legitimate sources of social support because teacher roles have been traditionally defined in fairly narrow terms as educators and mentors. Teachers themselves may not feel comfortable discussing student’s personal problems because they have not been expected to do so in the past. Teacher training and education around the provision of informal social support to students and the benefits of support for adolescent well-being, might be an effective means of raising teacher comfort level and help to improve student perceptions of teachers as caring and trustworthy individuals.

- Schools are encouraged to provide students increased access to resources and activities that hold potential for promoting positive peer bonding. Our data revealed higher levels of self-esteem and minimal behavioural problems among students who reported warm student relations at the level of the school and who felt personally cared for and respected by fellow classmates. School-wide “Buddies” programs may be one way of addressing student needs for belonging and involvement. Under the buddy system, older students pair with younger students and provide assistance with academics, offer advice on personal issues (e.g., peer-related problems), or involve them in sports and other activities outside the classroom. Enhanced feelings of belonging may also be achieved through greater involvement in extra-curricular school activities. Support for the value of such activities for promoting a strong sense of school membership appears to be growing (Mahoney & Cairns, 1997; Somers & Gizzi, 2001). It is worth noting that the vast majority of students in our sample did not participate in any activities. In addition, many felt that they were excluded from activities at school.
- Providing students with more opportunities to become socially integrated into the school setting will not achieve its desired effect if the motivation to become involved is lacking or if there exists a measurable level of discomfort interacting socially with unfamiliar peers. For this reason, Rosenfeld et al. (1998) recommend the adoption of a social skills based approach to provide encouragement and guidance to low support students in developing social relationships with other students (e.g., how to recognize approachability cues, identifying topics for conversation, and how to initiate and sustain a conversation). Expanded extra-curricular activities also places more students in close contact with each other, and therefore the potential exists for heightened conflict (Welsh, 2000). To ensure that strengthened bonds with peers and classmates do not contribute to higher levels of school disorder, activities should be supplemented with peer mediation and conflict resolution programs. These programs have been successful in reducing student conflict in a variety of school settings (Bickmore, 2000). Activities should also be non-competitive in nature and seek to minimize hierarchical divisions (e.g., staff members and students) that might conflict with the principles of unity, equality, and shared values underlying the Schools as Communities perspective (Battistich, Solomon, & Watson, 1998).
- Schools would benefit from a more elaborate and unified system of rewards and recognition involving frequent use of assemblies, honour rolls, and public lists to recognize students for academic achievement, attendance, and involvement in extracurricular activities. To be effective, school-wide reward systems should be tied to classroom reward structures (e.g., teacher praise and recognition of student participation and attendance). Reward systems should be public to enhance positive peer group attitudes toward learning, a motivating factor for strong academic performance. Recognizing that all students possess strengths and weaknesses, rewards should be distributed not only on the basis of achievement but effort and improvement. It is noteworthy that between 20 and 30 percent of students in our study felt that teachers provided special treatment to kids who received good grades and that only some kids were praised for their work.
- Schools must continue to strengthen policies and programs that promote high academic expectations for their students. In our study, perceptions of a strong school emphasis on academics was associated with stronger feelings of individual teacher support, lower student drug use, fewer incidents of truancy, and fewer disciplinary referrals. Higher academic

expectations might be achieved through a well-defined and integrated system of rewards for recognizing student achievement and improvement (as outline above), more regular communication with parents surrounding academic requirements and student progress, and school-initiated efforts that seek to increase the involvement of parents in their children's homework. Peer tutoring programs (highly recommended by the Counselling Foundation of Canada, 1999), programs that involve in-school presentations by community business leaders, and educational field trips to local organizations could also prove beneficial. Also promising are science fairs and programs that introduce students to a variety of different career paths, for example, programs that build partnerships with local community colleges or universities.

- Perhaps the most consistent and potent predictor of student's sense of school membership and healthy behavioural functioning was the extent to which they perceived an emphasis placed by the school on learning goals stressing relative ability, competition, and social comparison, in the assessment of student academic performance. Students that perceived a minimal school emphasis on ability-focussed learning goals were much more likely than others to feel supported by their teachers, exhibited fewer behavioural problems, and performed better academically. Perceived emphasis on task goal structures (e.g., an emphasis on understanding subject matter, effort and improvement), although less of a contributing factor to the achievement of positive outcomes, was associated with fewer incidents of victimization and improved mental health.
- The introduction of school policies aimed at de-emphasizing ability-focussed learning goals implies a new set of standards for judging student performance. School reform efforts have already shifted toward the adoption of learning goals that place less emphasis on facts and more emphasis on strategies for helping students to think critically and solve problems. A common thread underlying these efforts is the notion that all students are capable of strategic reasoning. Classroom instructional techniques such as cooperative learning (CL) have been promoted as a way of emphasizing thinking skills and higher order learning among students or as an alternative to grouping based on ability. Cooperative learning utilizes teams of students with different levels of ability clustered together within groups of four or five. Teachers in CL classrooms assign individual students roles in order for their group to accomplish a specific task. Groups are rewarded on the basis of the successful learning of individual students. Outcome evaluations of these programs, some more rigorous than others, boast a variety of positive results including improved academic achievement, better peer and race relations, higher self-esteem, and more favourable attitudes toward school (Slavin, 1991).
- Students in this study expressed considerable dissatisfaction with the level of school disorder at their school. Over one-third of participants reported high levels of inappropriate or negative behaviour among students including theft, drug use, verbal abuse, truancy, and destruction of property. Those who perceived these problems to be pervasive throughout the school setting were much more likely to report behavioural difficulties. School safety initiatives would be a useful starting point to address some of these problems. It is estimated that one in every eight students in Ontario (12 percent) worry about being harmed or threatened by other students at school (Centre for Addiction and Mental Health, 2002). Increased use of hall monitors, peer conflict/resolution programs, and better lighting, are examples of some common sense prevention strategies aimed at creating a non-threatening

learning environment. It is also the responsibility of schools (teachers and principals) to create the conditions that would allow students to feel safe in reporting incidents that pose a threat to their own well being or to fellow students.

- Although not included in this report, previous studies have confirmed the importance of fair and clearly defined school rules and disciplinary practices for achieving positive academic and social functioning among students. To gain legitimacy, rules and disciplinary practices should be perceived as fair and clear by students, staff, and parents, applied equally to all students, and consistently enforced. Special efforts should be undertaken to explain to students why rules are necessary. Modelling of rules by teachers and principals (e.g., arriving on time for classes, returning homework in a timely fashion) is needed to send a message to students that rules are meant for everyone. School policies pertaining to rules and disciplinary practices should be clearly posted at various locations inside the school (e.g., entranceways, bulletin boards, library, cafeteria, and gymnasium). Verbal and written communication of school rules and disciplinary practices should be made at the beginning of the school year and in the context of staff meetings, parent/teacher nights, and home form classrooms.
- School-based prevention initiatives alone are insufficient for effecting positive change in children's lives. To be successful, these initiatives must be supplemented with family and community programs that emphasize greater parental involvement at school, better parental monitoring of child activities (i.e., monitoring of homework and social activities), and strong educational values (Masten & Coatsworth, 1998). Sanders and Epstein (1998) reported that a comprehensive program of partnership activities between schools and families produced substantial gains in parental involvement with their children's education at home and at school. Importantly, sense of school membership was enhanced among teachers who were able to communicate with families about academic requirements and how to help children with homework. Parents achieved a greater sense of school membership when schools (teachers and principals) notified them of their children's progress. As noted above, heavy parental involvement does not guarantee a strong sense of school community if contacts with the school are initiated only by parents. For this reason, it is incumbent upon schools to regularly inform parents of their children's progress, to notify them of upcoming school events, and to welcome and organize parent volunteers to assist in classroom activities and extra-curricular programs (Belenardo, 2001).
- After-school programs may provide an important monitoring functioning for students at a time when many parents have not yet returned from work. Evidence suggests that violence among youth peaks at the end of the school day and then gradually declines into the evening hours (Howard, Flora, & Griffin, 1999). In addition, the amount of time children spend unsupervised both before and after school has been identified as a strong positive correlate of student drug abuse and poor academic performance (Richardson, Dwyer, McGuigan et al., 1989). Schools can also play an important role in identifying relocated youth and actively engaging them in student affairs and extra-curricular programs, involving the parents of these youth in after-school activities, and offering on-site counselling services (Matter & Matter, 1988). Previous studies have shown that children who are displaced from their school environment on a frequent basis find it difficult to develop an intimate knowledge of their settings and to develop trusting relationships. Results from the High School and Beyond study reported in the introduction of this report revealed that nearly one-quarter of all

students who moved twice since the fifth grade had dropped out of school compared to just 12 percent for students whose families had not moved.

### **Ingredients of Successful School-Based Ecological Programs**

The purpose of this report is not to prescribe a blueprint for action for the design and implementation of school environmental programs. However, our review of the literature suggests that there are several fundamental ingredients or components of ecologically focussed interventions that must be present before positive change in student learning and behavioural outcomes is likely to occur. We close with a list of components that educators and those working in the field of health promotion may find useful.

- Efforts to change the social ecology of schools should be guided by an overarching set of principles that when operationalized help to organize and guide the selection of programs and strategies. This report adopted the Schools as Communities perspective to facilitate an understanding of the processes linking environmental factors to student outcomes. Underlying this perspective were the common principles of equality, belonging, respect, caring, co-operation, trust, recognition, fairness, shared values and beliefs, and a common agenda of activities for fostering meaningful social interaction. Incorporating these principles into the fabric of ecological programs will help to create the conditions whereby the activities associated with one program component serve to reinforce and complement the activities of another and hence improve the likelihood of positive student outcomes.
- Social ecological programs are likely to achieve their greatest impact in reducing student academic and behavioural problems if they target simultaneously several domains of influence. Shouse's (1996) analysis of data from the 1988 US National Education Longitudinal Study found that, without a strong school commitment to academics (academic press), the presence of supportive relationships, shared activities, and common beliefs and values among school members had little or no impact on raising student academic achievement. However, the greatest improvements in achievement followed from a combination of a strong communal atmosphere and academic press.
- School reforms aimed at improving sense of school membership and other student outcomes should recognize that children's educational experiences occur within several imbedded contexts starting at the classroom level and extending outwards to broader contextual influences such as peer, teacher and school cultures, families, and local neighbourhoods. Programs that focus on just one of these areas at the exclusion of the others are not likely to succeed. For example, school wide programs to recognize and reward students for their social and academic achievements may have little noticeable impact on improving sense of school membership unless accompanied by a similar system of rewards at the classroom level.
- Programs that target the social ecology of schools should be sensitive to the developmental needs of students. Eccles and associates contend that secondary schools (more so than elementary schools) may be harmful to successful learning outcomes because they tend to fall short of meeting the developmental needs of students (Eccles et al., 1993). Secondary students, for example, generally have less influence in decision-making at the classroom level at time when there is a growing need for autonomy and independence. Paradoxically,

many developmentally appropriate programs aimed at modifying the environmental attributes of schools have been introduced at the middle school-level. Few have been embraced by high schools.

- The successful implementation of broad-based social ecological reforms relies on the establishment of sustainable school, family, and community partnerships that operate according to a specified framework for action and involvement. For example, the National Network of Partnership Schools in the United States (Sanders & Epstein, 1998) outlines six types of activities designed to foster a healthy learning environment for students. Activities are planned and co-ordinated by a committee consisting of students, teachers, administrators, parents, and members of the community. Committee members delegate responsibility to various groups in the partnership arrangement and monitor the work and progress in each of the six activity goals.
- Finally, ecological programs may be effective in preventing the escalation of some behavioural problems but are unlikely to address the specific needs of individuals with severe symptoms. Socially anxious and depressed youth, for example, are significantly more likely than other youth to experience academic problems, difficulties establishing and maintaining close friendships, peer rejection and neglect, and impairments in social competence and problem-solving skills (Ginsburg et al., 1998; La Greca & Lopez, 1998; Levendosky, Okun, & Parker, 1995). A recent review of research on issues unique to the school environment concluded that many of the topics of concern to educators including truancy, school drop out, disciplinary referrals, and retention, may be partially the result of undiagnosed affective disorders (Mattison, 2000). For this reason, ecological programs should be supplemented with specialized in-school services such as student assistance programs that provide referrals, service recommendations, and follow-up support programs for students in greatest need of help (see for example, Fertman, Fichter, Schlesinger, Tarasevich, Wald, & Zhang, 2001; Scott, Surface, Friedli, & Barlow, 1999).

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**APPENDIX A**  
**TEACHER/STUDENT LETTER OF INTRODUCTION**

(to be printed on CAMH letterhead)

[.....], 1999

Dear Teacher/Student:

I am writing to inform you about an upcoming research study sponsored by the Centre for Addiction and Mental Health (CAMH). The purpose of the study is to achieve a better understanding of how school environmental factors (e.g., school safety and disciplinary practices, teacher/student relationships) as well as family and community influences impact on adolescent academic performance, psychological well-being, and behaviour. Findings will be used to help schools and families further improve the learning environment in which young people work.

On the mornings of [.....] grade nine students at your school will be asked to complete a 16 page questionnaire administered by CAMH community program consultants. Students will be asked questions pertaining to their involvement in school and extra-curricular activities, perceptions of school climate (e.g., school safety, student relations), relationships with significant others (e.g., peers, families, teachers), learning difficulties, emotional problems, and risky health behaviours. On each day students will complete the questionnaire for one school period in the comfort of their home form classroom. Participation is completely voluntary. Students who choose to participate are free to skip any questions they do not wish to answer. To guarantee student anonymity, student names will not appear anywhere on the questionnaires.

In order to better understand how school environment influences student learning and behavioural outcomes, students will be asked to participate in this study again in the spring of 2000 and the fall of 2000. Participating students will qualify to win one of three prizes with a value of \$75-\$100 when the study is completed.

We greatly appreciate your participation in this study.

Thank you kindly,

David J. DeWit, Ph.D.  
Principal Investigator of Research, CAMH

**APPENDIX B: PARENTAL CONSENT FORM**  
(to be printed on school letterhead)

[.....], 1999

Dear Parent:

I am writing to inform you about an upcoming research study sponsored by the Centre for Addiction and Mental Health (CAMH). The purpose of the study is to achieve a better understanding of how school environmental factors (e.g., school safety and disciplinary practices, teacher/student relationships) as well as family and community influences impact on children's academic performance, psychological well-being, and behaviour. Findings will be used to help schools and families further improve the learning environment in which children work.

On the mornings of [.....] your child along with other grade nine students at our school will be asked to complete a 16 page questionnaire administered by CAMH community program consultants. Students will be asked questions pertaining to their involvement in school and extra-curricular activities, perceptions of school climate (e.g., school safety, student relations) relationships with significant others (e.g., peers, families, teachers), learning difficulties, emotional problems, and risky health behaviours. On each day students will complete the questionnaire for one school period in the comfort of their home form classroom. Students will be instructed that participation is completely voluntary. Those who do choose to participate will be free to skip any questions they do not wish to answer. To guarantee student anonymity, student names will not appear anywhere on the questionnaires. Participating students will qualify to win one of three prizes with a value of \$75-\$100 when the study is completed.

In order to better understand how school environment influences student learning and behavioural outcomes, your child will be asked to participate in this study again in the spring of 2000 and fall of 2000.

Please sign and date the form below only if you do not wish your child to participate in this study. The completed form must be returned to the school no later than one week before the first planned date of survey administration.

Thank you kindly,

\_\_\_\_\_  
Principal

I do not give my consent for (child's name) \_\_\_\_\_ to participate in this study.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Parent/Guardian Signature

### Appendix C: Description of Demographic Variables

	# Items	%	Mean	Standard Deviation	Min-Max
<b>Demographics and Socioeconomic Background Characteristics</b>					
Gender (male)	1	46.5	---	---	---
Age	1		13.79	0.57	---
12		1.8	---	---	---
13		23.1	---	---	---
14		70.7	---	---	---
15+		4.4	---	---	---
Living Arrangements	1				
Both natural parents (vs. other)		70.9	---	---	---
Number Siblings	1		2.05	1.52	---
0		5.1	---	---	---
1		39.0	---	---	---
2		30.0	---	---	---
3		13.1	---	---	---
4+		12.8	---	---	---
Number Family Moves (past 5 years)	1		0.95	1.26	---
0		51.9	---	---	---
1		24.0	---	---	---
2		9.3	---	---	---
3		7.0	---	---	---
4+		7.7	---	---	---
Number Times Changed Schools	1		1.35	1.43	---
0		39.6	---	---	---
1		23.1	---	---	---
2		12.8	---	---	---
3		11.5	---	---	---
4+		13.0	---	---	---
Length of Time in Current Residence	1				
<12 months		11.7	---	---	---
1 year		6.1	---	---	---
2 years		8.4	---	---	---
3+years		73.8	---	---	---
Dwelling Status	1				
Own (vs. rent)		86.4	---	---	---
Parental Employment Status	1				
Both unemployed		7.0	---	---	---
Father only		8.9	---	---	---
Mother only		10.7	---	---	---
Neither		73.4	---	---	---

continued next page

	# Items	%	Mean	Standard Deviation	Min-Max
<b>Demographics and Socioeconomic Background Characteristics (continued)</b>					
Mother Education	1				
Grade 8 or less		1.5	---	---	---
Some high school		12.3	---	---	---
Graduated high school		25.3	---	---	---
Some college/university		14.8	---	---	---
Graduated college/university		46.2	---	---	---
Father Education	1				
Grade 8 or less		3.4	---	---	---
Some high school		14.8	---	---	---
Graduated high school		22.4	---	---	---
Some college/university		12.6	---	---	---
Graduated college/university		46.8	---	---	---
Family Socioeconomic Status	5	---	5.73	0.97	5-10
Family Stability	4	---	4.86	1.11	4-8
Family Social Support	6	---	12.86	5.32	6-30
Parental Autonomy Support	5	---	12.29	4.09	5-25
Parental Monitoring Child Activities	3	---	4.37	1.48	3-9
Parental Interest Child's Education	3	---	5.37	1.79	3-13
Peer Deviance	8	---	10.20	3.31	8-24
Involvement in Community Activities	4	---	12.79	2.94	4-16

## Appendix D: Description Of Sense Of School Membership/Culture Variables

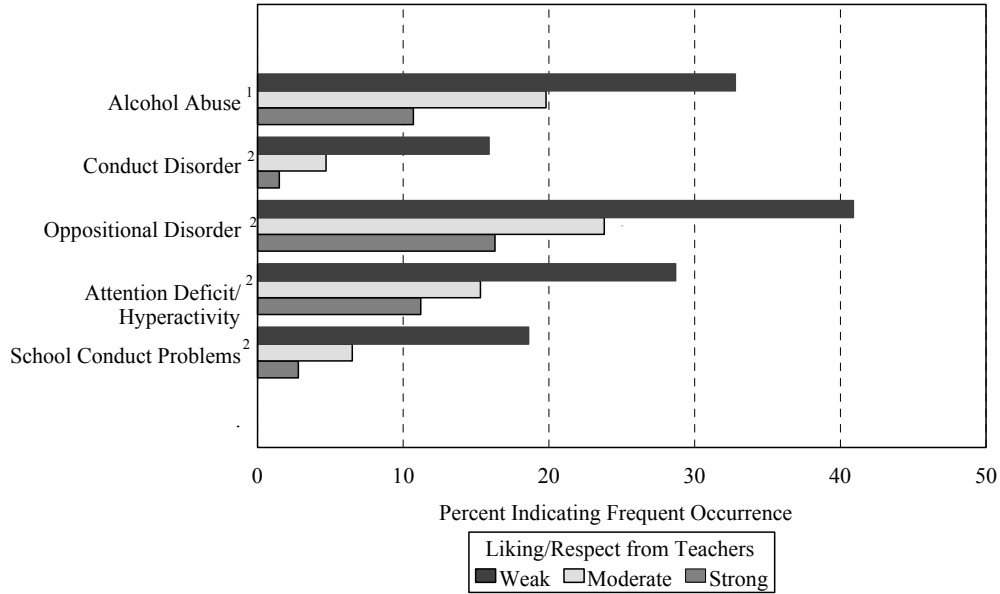
	# Items	%	Mean	Standard Deviation	Min-Max
<b>Sense of School Membership</b>					
Classmate Support	3	---	6.21	2.69	3-15
Teacher Support	6	---	14.68	4.24	6-30
Acceptance/Respect and Inclusion in Activities	6	---	15.08	4.01	6-30
Acceptance/Respect from Teachers	4	---	9.69	3.13	4-20
General Acceptance and Belonging	3	---	6.82	2.89	3-15
<b>School Culture</b>					
Student Behavioural Norms	7	---	23.10	5.53	7-35
Quality of Student/Teacher Relations	4	---	9.95	3.01	4-20
Quality of Student Relations	4	---	9.86	3.15	4-20
School Conformity Task Goal Structures	6	---	13.18	4.06	6-30
School Conformity Ability Goal Structures	5	---	12.89	4.51	5-25
Student Body Emphasis on Academics	3	---	8.27	2.52	3-15
School Emphasis on Academics	3	---	5.57	1.76	3-15

## Appendix E: Description of Study Outcomes

	# Items	%	Mean	Standard Deviation	Min-Max
<b>Psychological and Behavioural Outcomes</b>					
Self-Esteem	5	---	12.42	4.43	5-25
Alcohol Abuse	4	---	5.41	2.67	4-16
Substance Use	3	---	6.35	3.02	4-21
Disciplinary Referrals	2	---	0.93	1.88	0-10
Truancy	2	---	0.83	1.89	0-10
Student Victimization	4	---	6.11	2.90	4-20
School Conduct Problems	3	---	3.68	1.15	3-9
Conduct Disorder	12	---	14.77	3.51	12-36
Oppositional Disorder	9	---	14.45	3.81	9-27
Attention Deficit/Hyperactivity	14	---	22.68	5.50	14-42
Depression (Psychological)	7	---	15.50	6.52	7-35
Depression (Physiological)	7	---	18.79	5.68	7-35
Fear of Negative Peer Evaluation	8	---	18.37	7.30	8-40
Social Avoidance/Distress Specific to New Situations	4	---	9.59	3.90	4-20
Generalized Social Avoidance/Distress	4	---	7.38	3.09	4-20
Thrill-seeking	4	---	18.29	3.42	6-30
Academic Achievement (Overall Grades)	1				
A's		32.5	---	---	---
B's		39.9	---	---	---
C's		19.5	---	---	---
D's		6.3	---	---	---
F's		1.8	---	---	---
Academic Achievement (Performance in Subject Areas)	1				
Very well/excellent		13.5	---	---	---
Quite well/good		37.8	---	---	---
Pretty well/average		34.8	---	---	---
Not too well/below average		11.9	---	---	---
Not too well/poorly		2.0	---	---	---

## Appendix F: Sense of School Membership Figures

Figure 1a  
Student Externalizing Behavioural Problems by Sense of School Membership (Liking/Respect from Teachers)

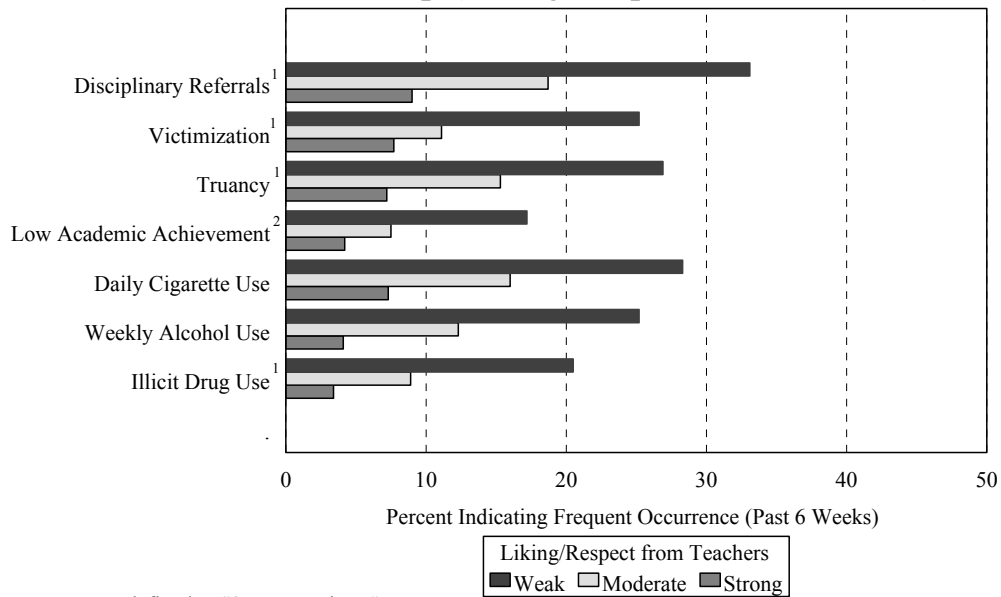


<sup>1</sup>Frequent occurrence defined as "2 or more times" in the past 6 weeks;

<sup>2</sup>Frequent occurrence defined as "often or very true" for 20-25 percent of items in the past 6 months

NOTE: Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

Figure 1b  
Student Academic and Behavioural Difficulties by Sense of School Membership (Liking/Respect from Teachers)



<sup>1</sup>Frequent occurrence defined as "2 or more times"

<sup>2</sup>Grade of C's or less in most subject areas

NOTE: Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

Figure 1c  
 Student Internalizing Behavioural Problems by Sense of School Membership (Liking/Respect from Teachers)

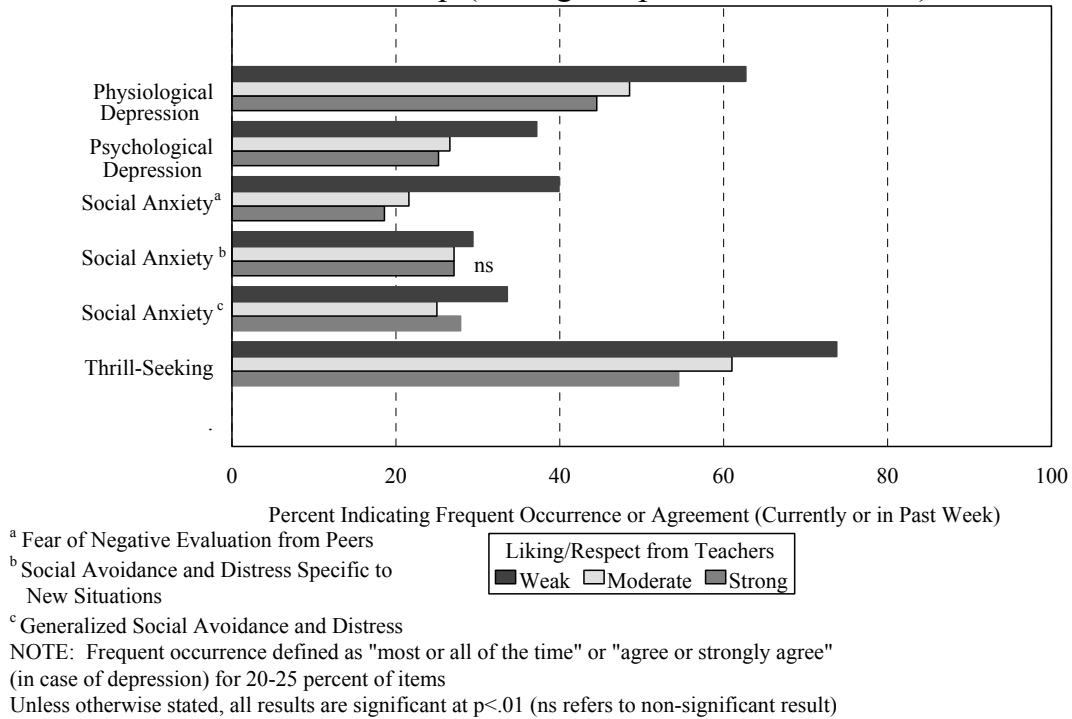
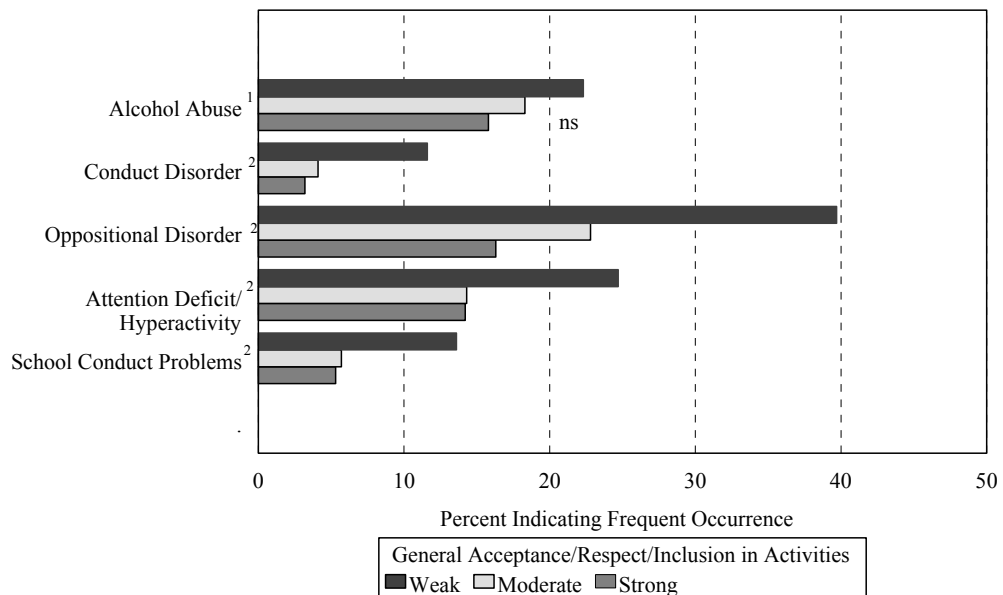
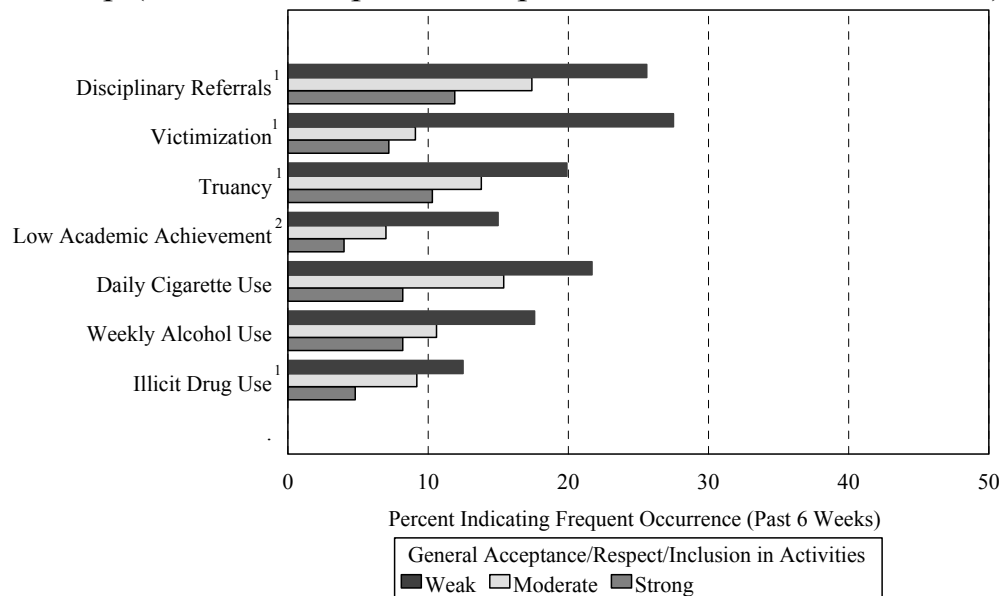


Figure 2a  
 Student Externalizing Behavioural Problems by Sense of School Membership (General Acceptance/Respect and Inclusion in Activities)



**Figure 2b**  
**Student Academic and Behavioural Difficulties by Sense of School Membership (General Acceptance/Respect and Inclusion in Activities)**

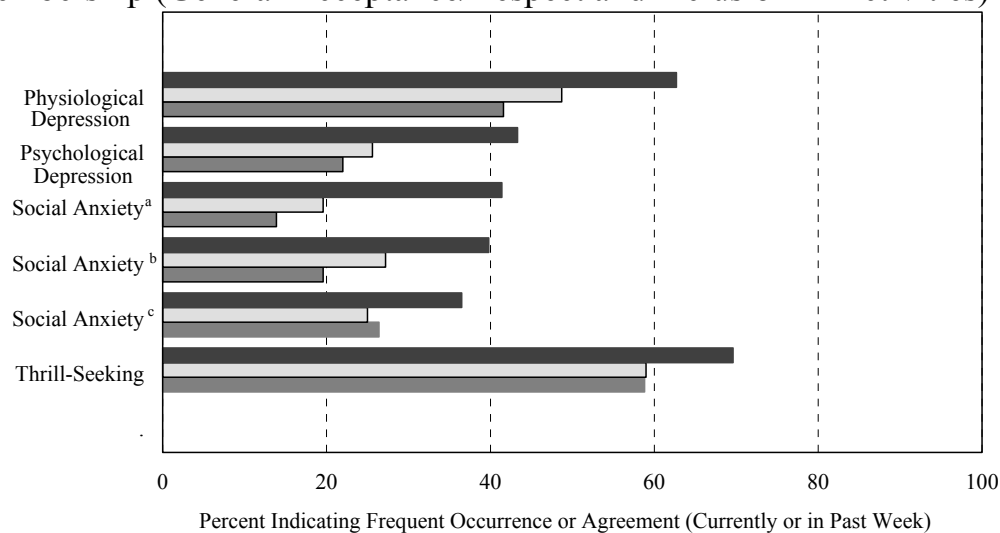


<sup>1</sup>Frequent occurrence defined as "2 or more times"

<sup>2</sup>Grade of C's or less in most subject areas

NOTE: Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

**Figure 2c**  
**Student Internalizing Behavioural Problems by Sense of School Membership (General Acceptance/Respect and Inclusion in Activities)**



<sup>a</sup> Fear of Negative Evaluation from Peers

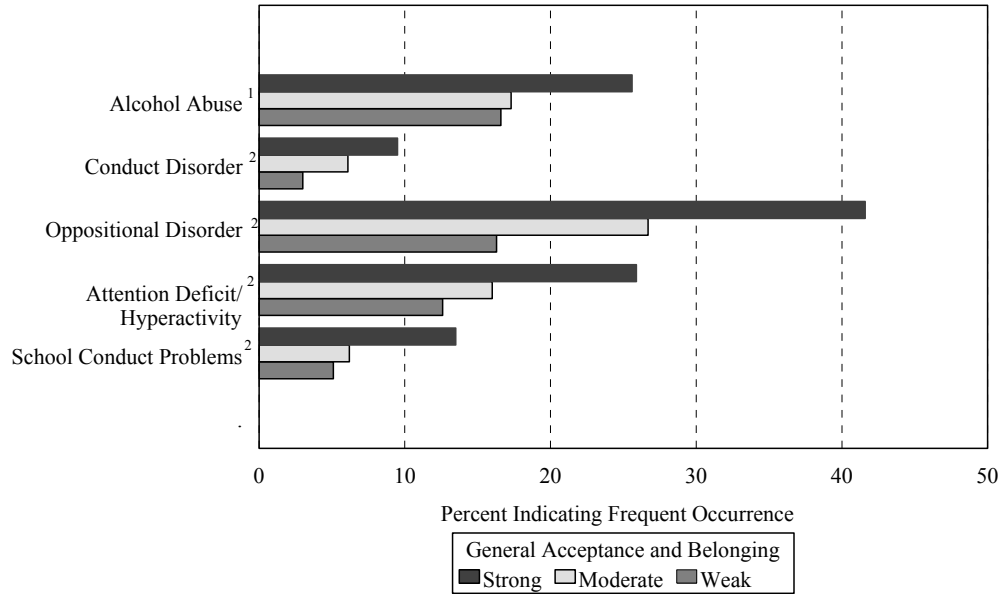
<sup>b</sup> Social Avoidance and Distress Specific to New Situations

<sup>c</sup> Generalized Social Avoidance and Distress

NOTE: Frequent occurrence defined as "most or all of the time" or "agree or strongly agree" (in case of depression) for 20-25 percent of items

Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

**Figure 3a**  
**Student Externalizing Behavioural Problems by Sense of School Membership (General Acceptance and Belonging)**

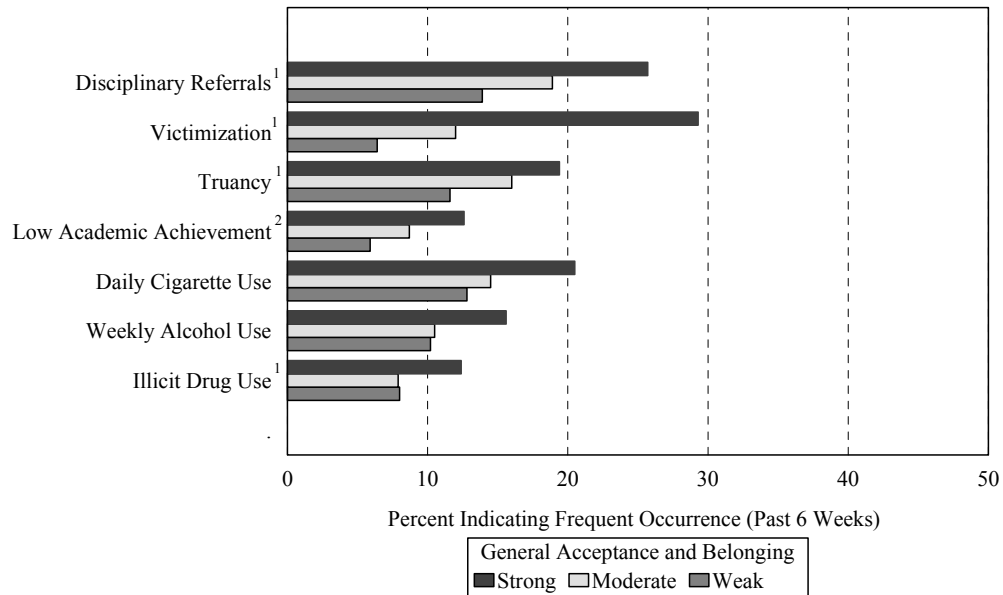


<sup>1</sup>Frequent occurrence defined as "2 or more times" in the past 6 weeks;

<sup>2</sup>Frequent occurrence defined as "often or very true" for 20-25 percent of items in the past 6 months

NOTE: Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

**Figure 3b**  
**Student Academic and Behavioural Difficulties by Sense of School Membership (General Acceptance and Belonging)**

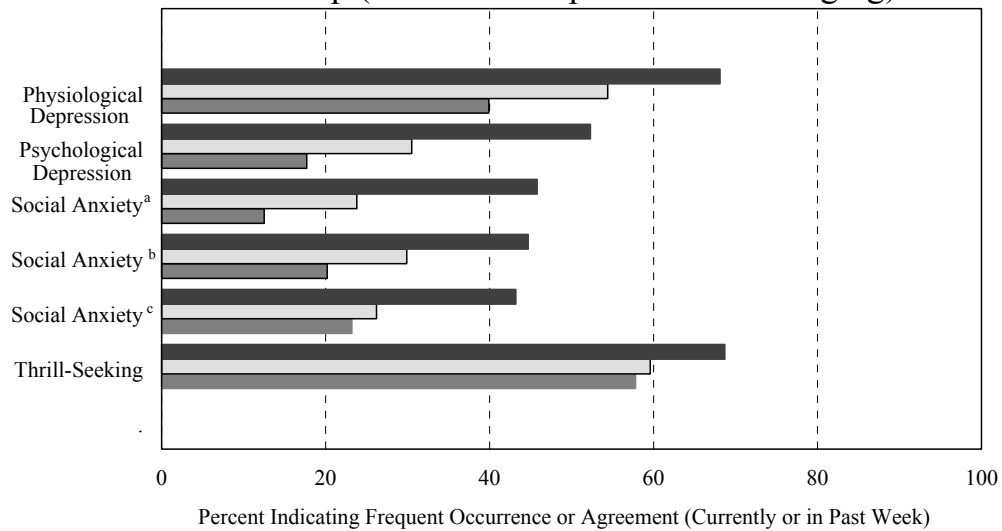


<sup>1</sup>Frequent occurrence defined as "2 or more times"

<sup>2</sup>Grade of C's or less in most subject areas

NOTE: Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

**Figure 3c**  
**Student Internalizing Behavioural Problems by Sense of School Membership (General Acceptance and Belonging)**



<sup>a</sup> Fear of Negative Evaluation from Peers

<sup>b</sup> Social Avoidance and Distress Specific to New Situations

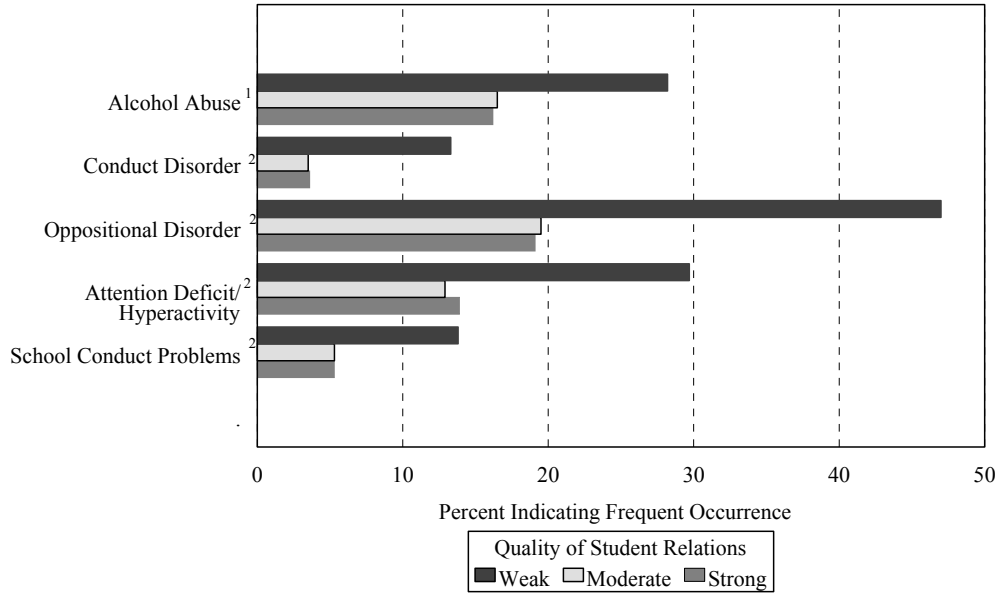
<sup>c</sup> Generalized Social Avoidance and Distress

NOTE: Frequent occurrence defined as "most or all of the time" or "agree or strongly agree" (in case of depression) for 20-25 percent of items

Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

## Appendix G: School Culture Figures

Figure 1a  
Student Externalizing Behavioural Problems  
by Quality of Student Relations

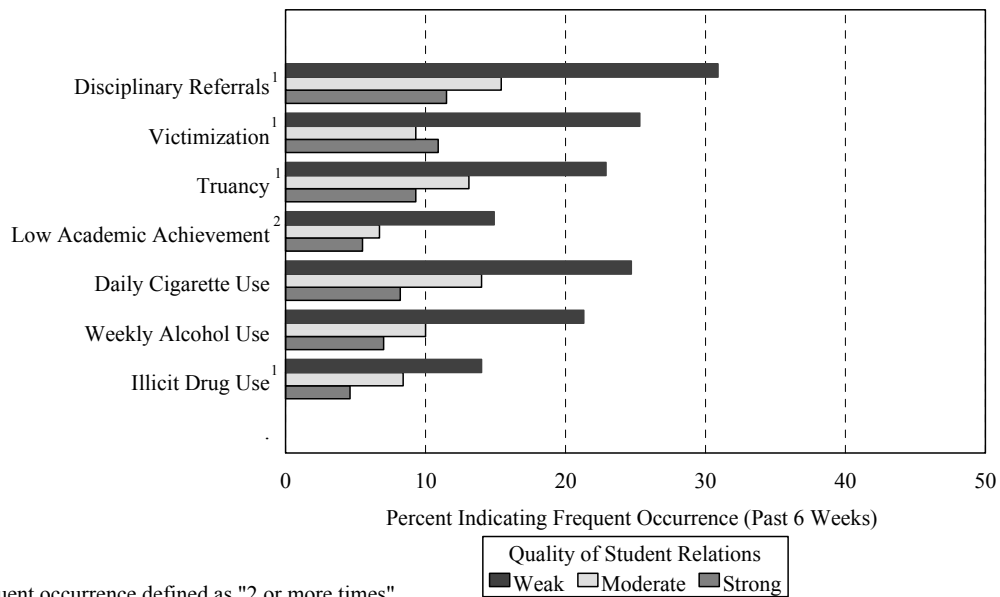


<sup>1</sup>Frequent occurrence defined as "2 or more times" in the past 6 weeks

<sup>2</sup>Frequent occurrence defined as "often or very true" for 20-25 percent of items in the past 6 months

NOTE: Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

Figure 1b  
Student Academic and Behavioural Difficulties  
by Quality of Student Relations

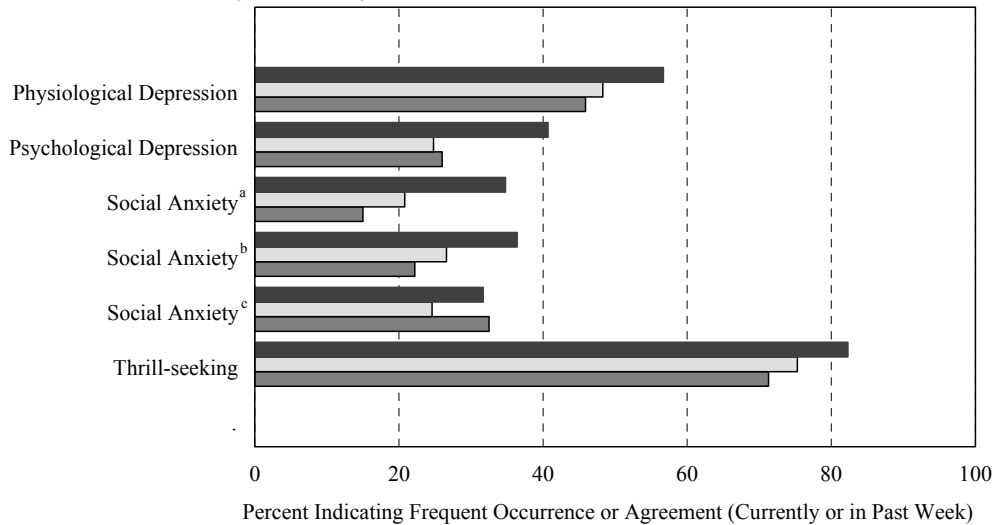


<sup>1</sup>Frequent occurrence defined as "2 or more times"

<sup>2</sup>Grade of C's or less in most subject areas

NOTE: Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

Figure 1c  
 Student Internalizing Behavioural Problems  
 by Quality of Student Relations



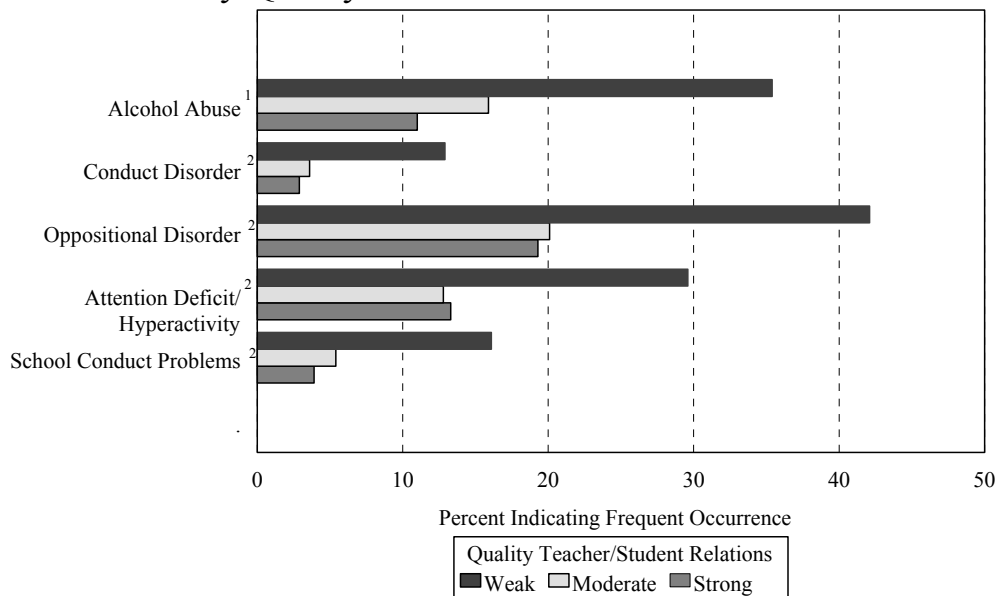
<sup>a</sup> Fear of Negative Evaluation from Peers

<sup>b</sup> Social Avoidance and Distress Specific to New Situations

<sup>c</sup> Generalized Social Avoidance and Distress

NOTE: Frequent occurrence defined as "most of the time" or "agree or strongly agree" (in case of depression) for 20-25 percent of items. Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

Figure 2a  
 Student Externalizing Behavioural Problems  
 by Quality of Teacher/Student Relations

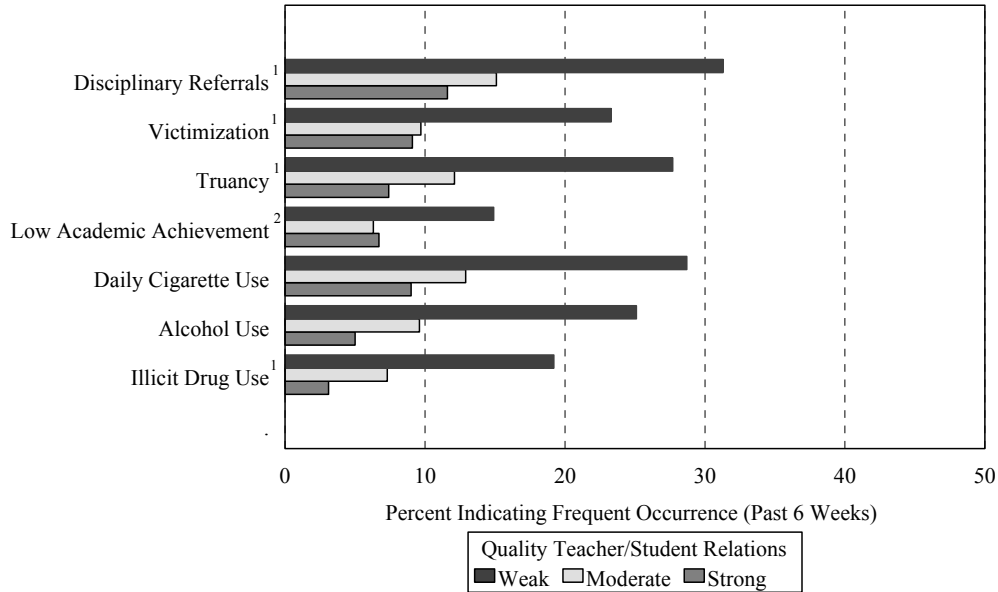


<sup>1</sup>Frequent occurrence defined as "2 or more times" in the past 6 weeks

<sup>2</sup>Frequent occurrence defined as "often or very true" for 20-25 percent of items in the past 6 months

NOTE: Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

**Figure 2b**  
**Student Academic and Behavioural Difficulties**  
**by Quality of Teacher/Student Relations**

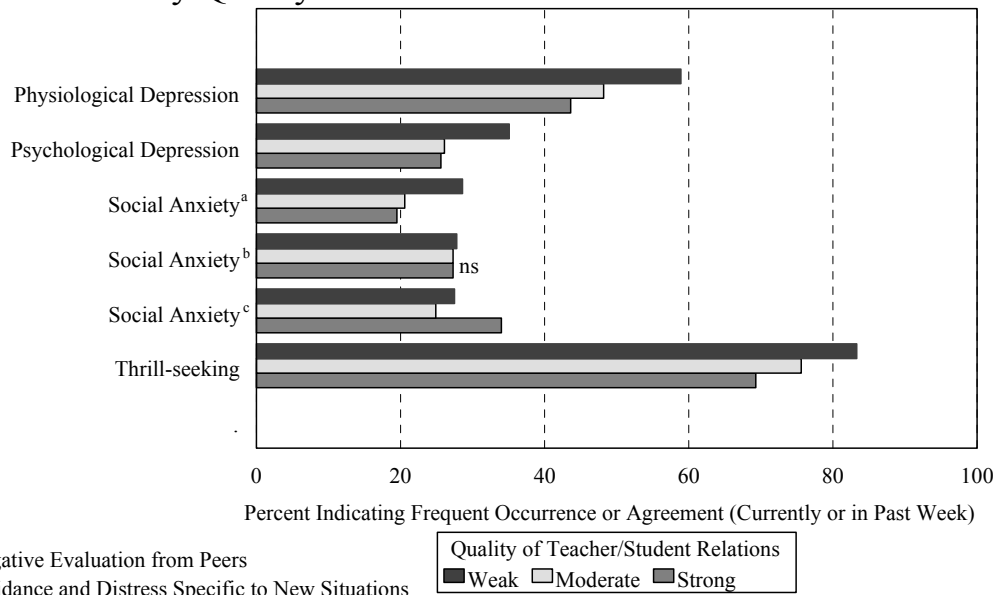


<sup>1</sup>Frequent occurrence defined as "2 or more times"

<sup>2</sup>Grade of C's or less in most subject areas

NOTE: Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

**Figure 2c**  
**Student Internalizing Behavioural Problems**  
**by Quality of Teacher/Student Relations**



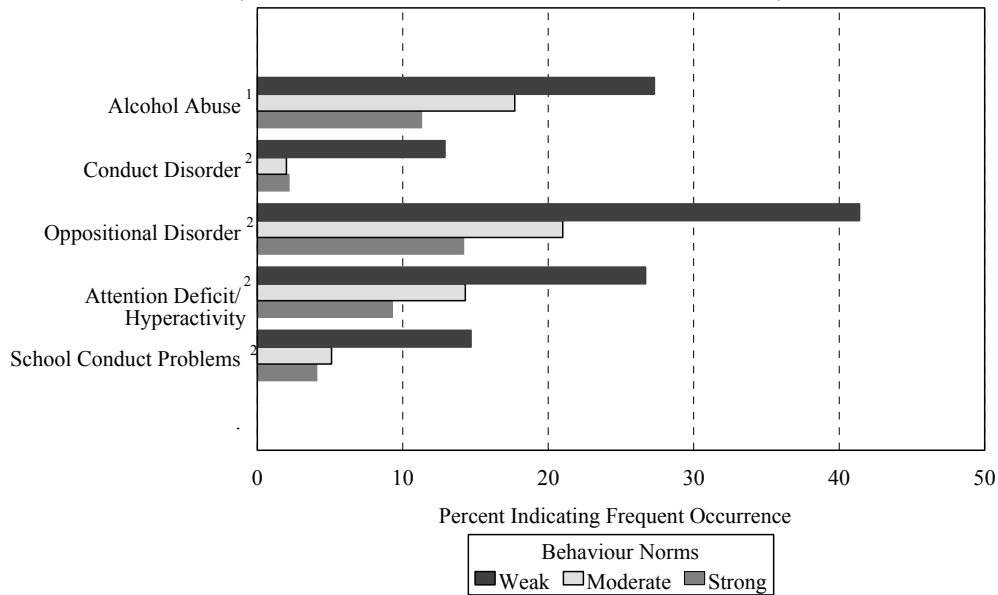
<sup>a</sup> Fear of Negative Evaluation from Peers

<sup>b</sup> Social Avoidance and Distress Specific to New Situations

<sup>c</sup> Generalized Social Avoidance and Distress

NOTE: Frequent occurrence defined as "most of the time" or "agree or strongly agree" (in case of depression) for 20-25 percent of items. Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

Figure 3a  
 Student Externalizing Behavioural Problems  
 by Behaviour Norms of Student Body

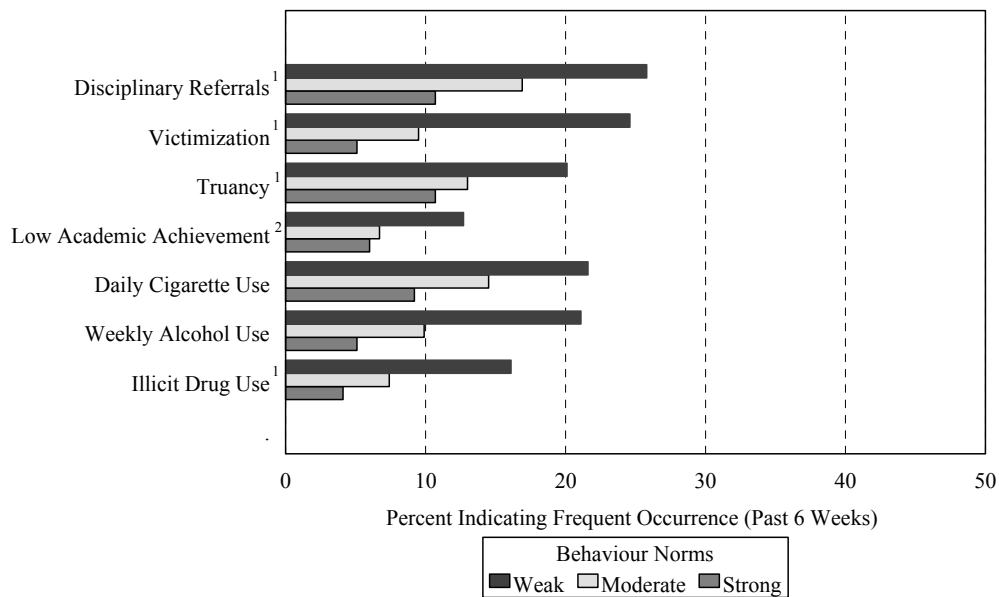


<sup>1</sup>Frequent occurrence defined as "2 or more times" in the past 6 weeks

<sup>2</sup>Frequent occurrence defined as "often or very true" for 20-25 percent of items in the past 6 months

NOTE: Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

Figure 3b  
 Student Academic and Behavioural Difficulties  
 by Behaviour Norms of Student Body

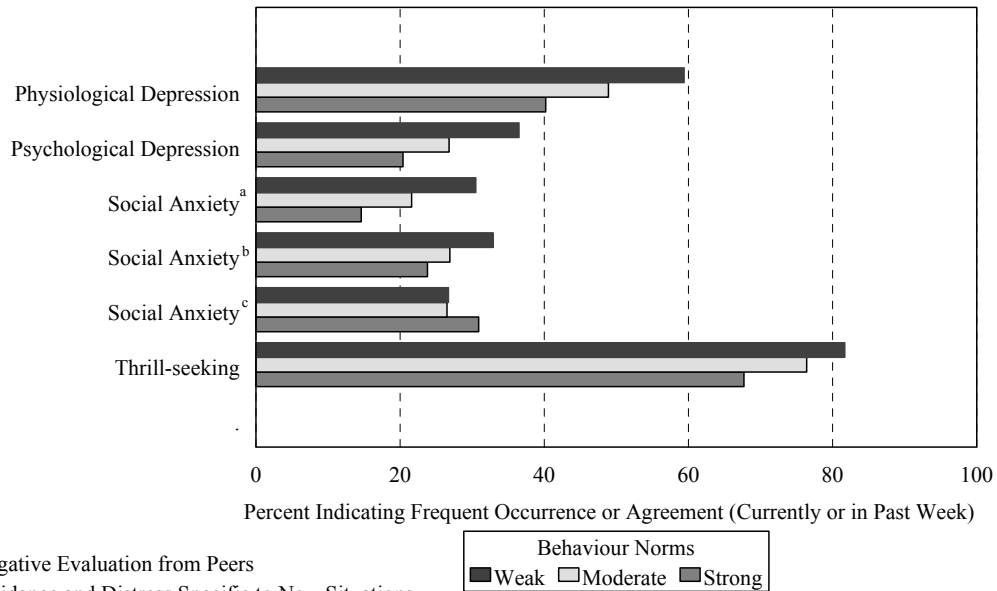


<sup>1</sup>Frequent occurrence defined as "2 or more times"

<sup>2</sup>Grade of C's or less in most subject areas

NOTE: Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

Figure 3c  
 Student Internalizing Behavioural Problems  
 by Behaviour Norms of Student Body



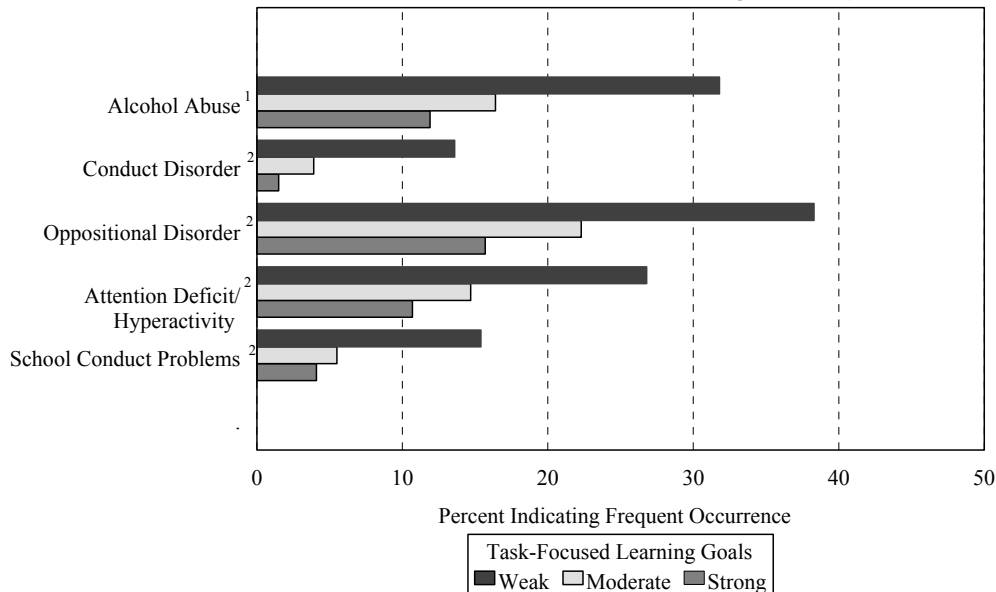
<sup>a</sup> Fear of Negative Evaluation from Peers

<sup>b</sup> Social Avoidance and Distress Specific to New Situations

<sup>c</sup> Generalized Social Avoidance and Distress

NOTE: Frequent occurrence defined as "most of the time" or "agree or strongly agree" (in case of depression) for 20-25 percent of items. Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

Figure 4a  
 Student Externalizing Behavioural Problems by School  
 Goal Structure (Task Focused Learning Goals)

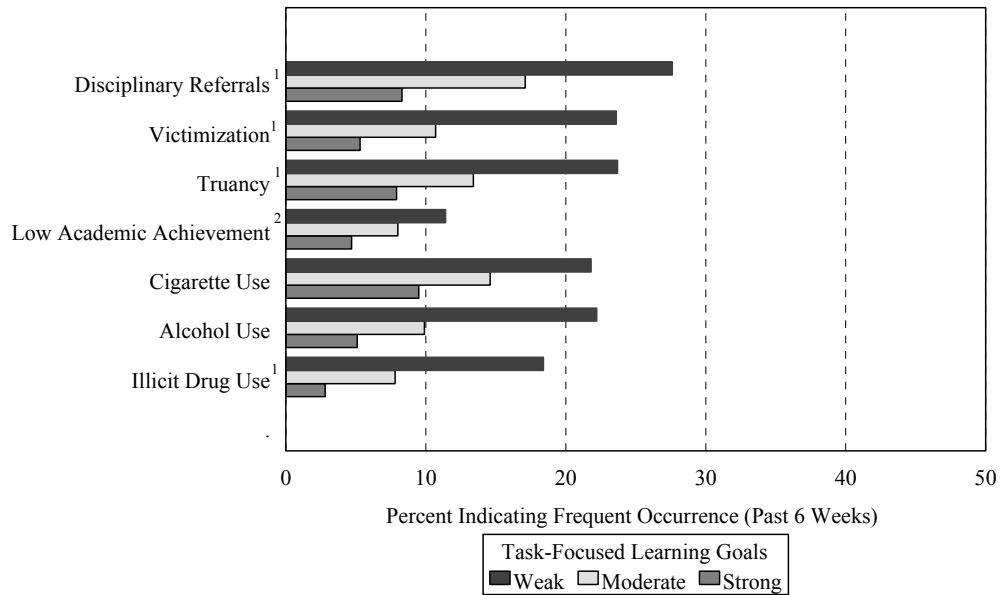


<sup>1</sup>Frequent occurrence defined as "2 or more times" in the past 6 weeks

<sup>2</sup>Frequent occurrence defined as "often or very true" for 20-25 percent of items in the past 6 months

NOTE: Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

**Figure 4b**  
**Student Academic and Behavioural Difficulties by School Goal Structure (Task Focused Learning Goals)**

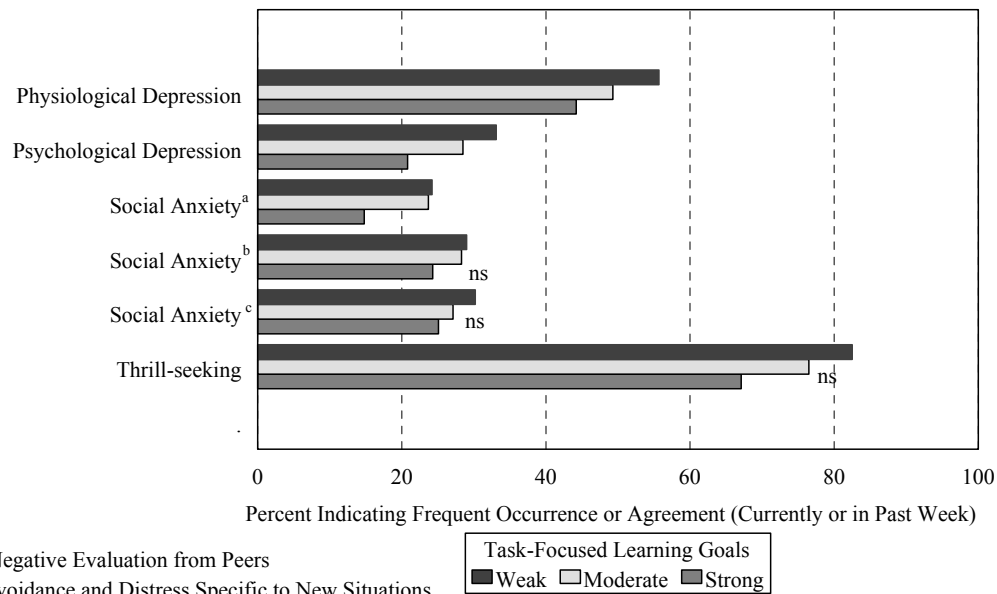


<sup>1</sup>Frequent occurrence defined as "2 or more times"

<sup>2</sup>Grade of C's or less in most subject areas

NOTE: Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

**Figure 4c**  
**Student Internalizing Behavioural Problems by School Goal Structure (Task Focused Learning Goals)**



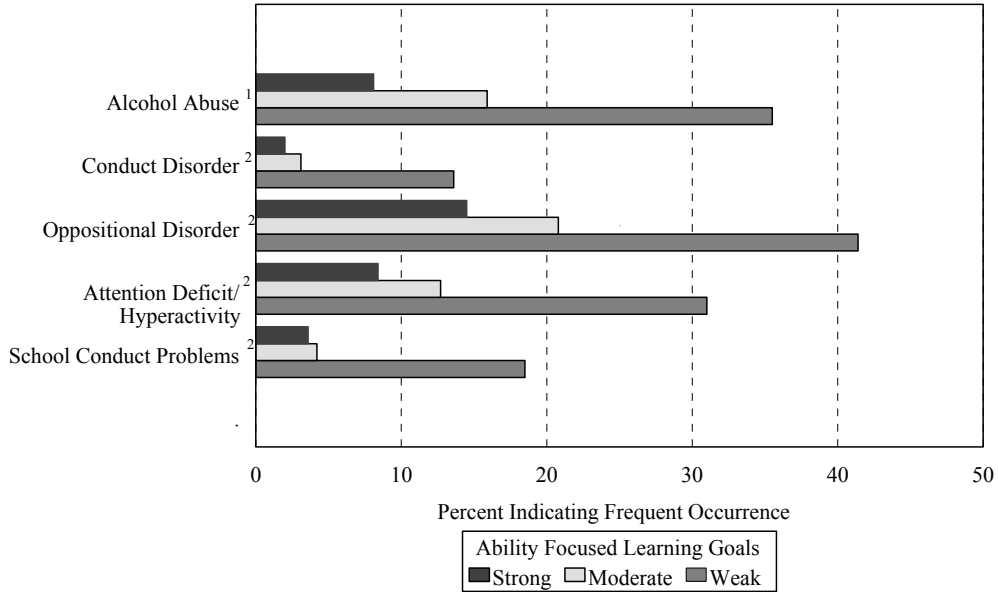
<sup>a</sup> Fear of Negative Evaluation from Peers

<sup>b</sup> Social Avoidance and Distress Specific to New Situations

<sup>c</sup> Generalized Social Avoidance and Distress

NOTE: Frequent occurrence defined as "most of the time" or "agree or strongly agree" (in case of depression) for 20-25 percent of items. Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

**Figure 5a**  
**Student Externalizing Behavioural Problems by School Goal Structure (Ability Focused Learning Goals)**

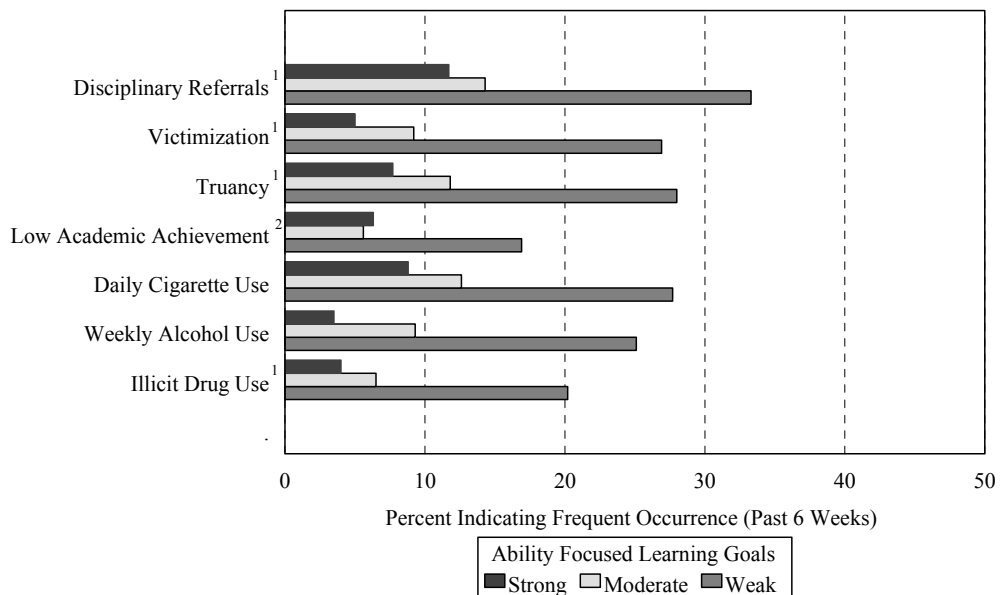


<sup>1</sup>Frequent occurrence defined as "2 or more times" in the past 6 weeks

<sup>2</sup>Frequent occurrence defined as "often or very true" for 20-25 percent of items in the past 6 months

NOTE: Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

**Figure 5b**  
**Student Academic and Behavioural Difficulties by School Goal Structure (Ability Focused Learning Goals)**

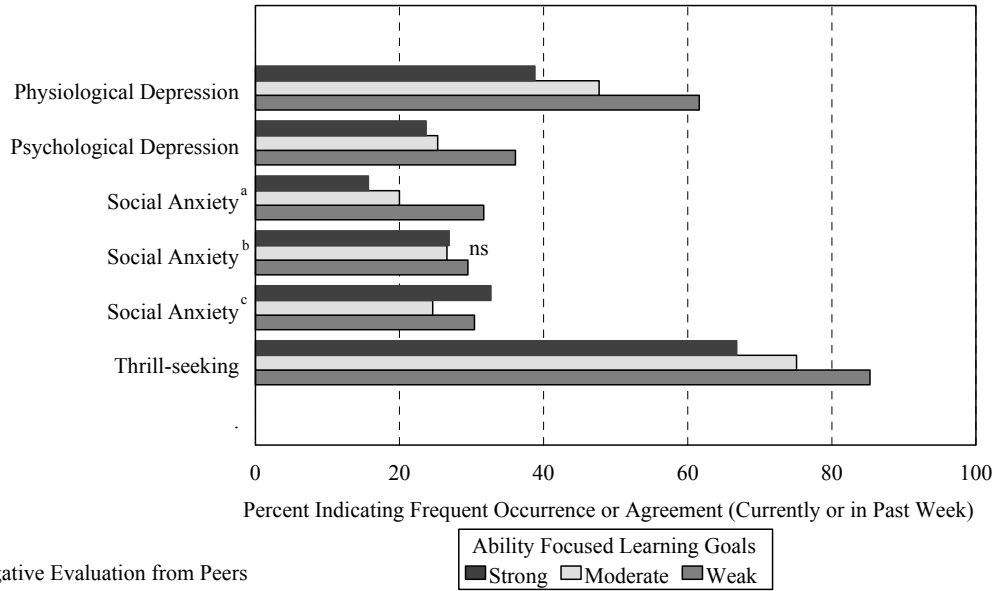


<sup>1</sup>Frequent occurrence defined as "2 or more times"

<sup>2</sup>Grade of C's or less in most subject areas

NOTE: Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

Figure 5c  
 Student Internalizing Behavioural Problems by School Goal Structure (Ability Focused Learning Goals)



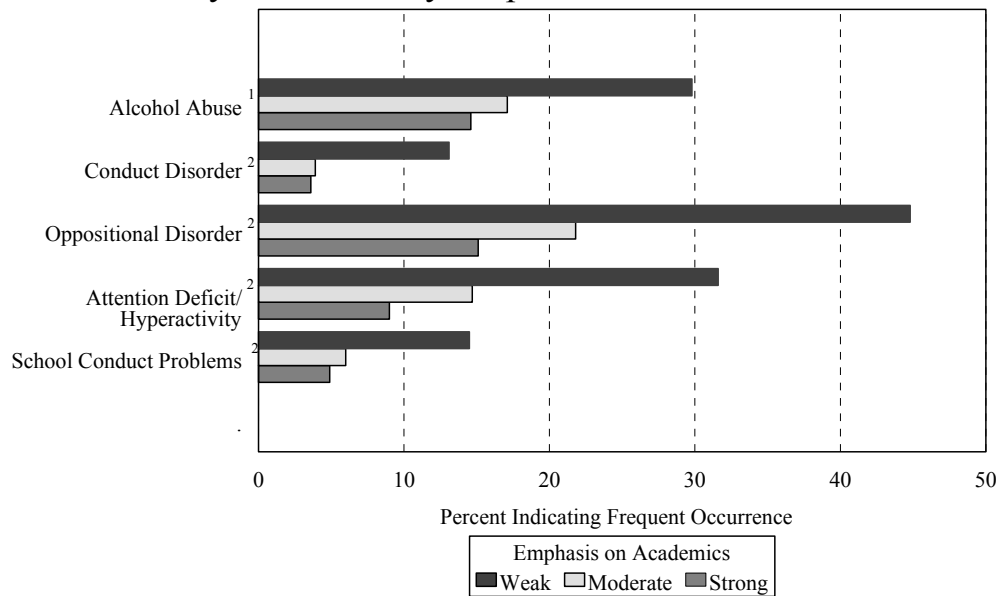
<sup>a</sup> Fear of Negative Evaluation from Peers

<sup>b</sup> Social Avoidance and Distress Specific to New Situations

<sup>c</sup> Generalized Social Avoidance and Distress

NOTE: Frequent occurrence defined as "most of the time" or "agree or strongly agree" (in case of depression) for 20-25 percent of items. Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

Figure 6a  
 Student Externalizing Behavioural Problems by Student Body Emphasis on Academics

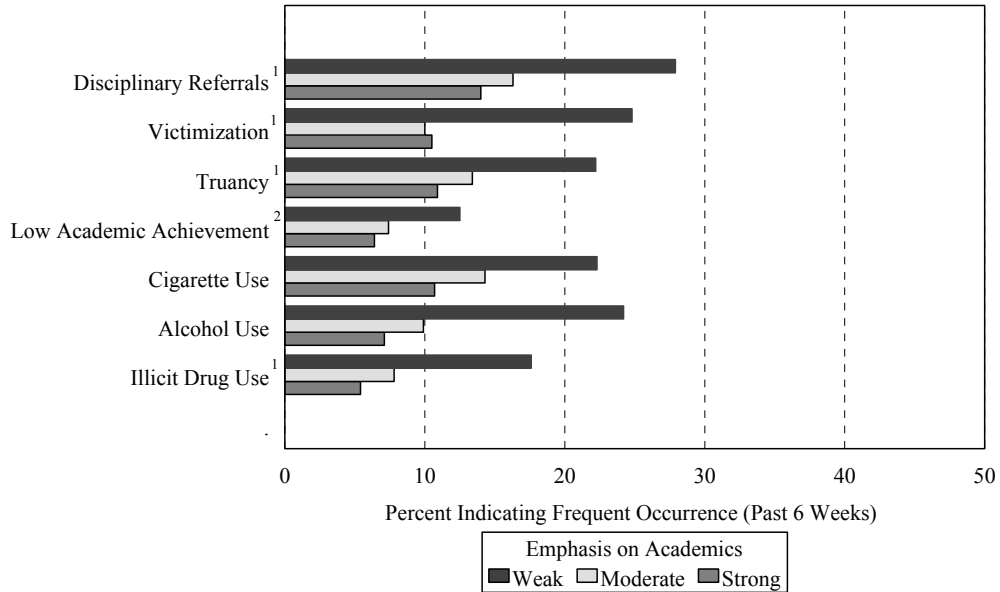


<sup>1</sup>Frequent occurrence defined as "2 or more times" in the past 6 weeks

<sup>2</sup>Frequent occurrence defined as "often or very true" for 20-25 percent of items in the past 6 months

NOTE: Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

Figure 6b  
 Student Academic and Behavioural Difficulties  
 by Student Body Emphasis on Academics

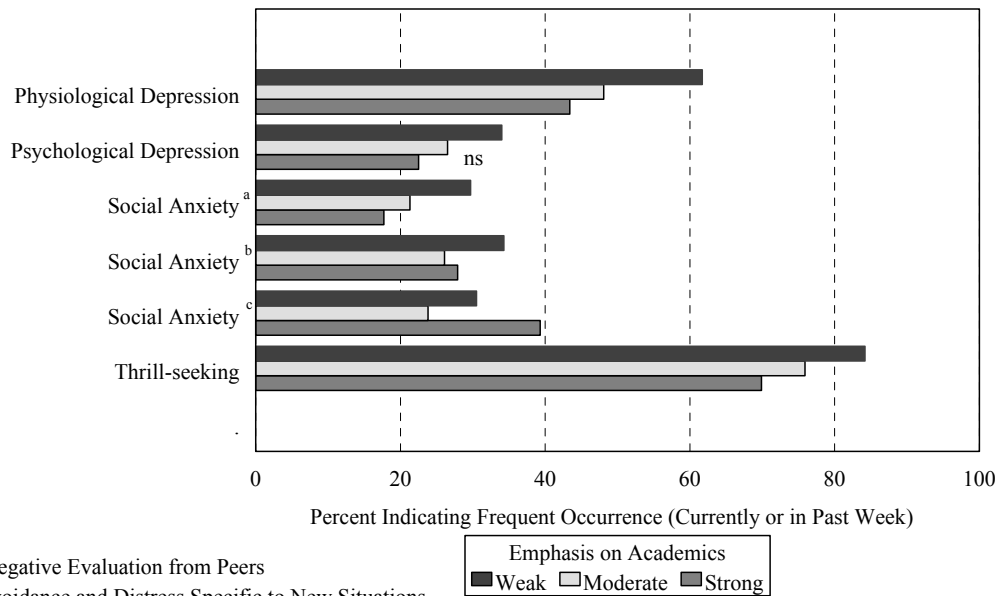


<sup>1</sup>Frequent occurrence defined as "2 or more times"

<sup>2</sup>Grade of C's or less in most subject areas

NOTE: Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

Figure 6c  
 Student Internalizing Behavioural Problems  
 by Student Body Emphasis on Academics



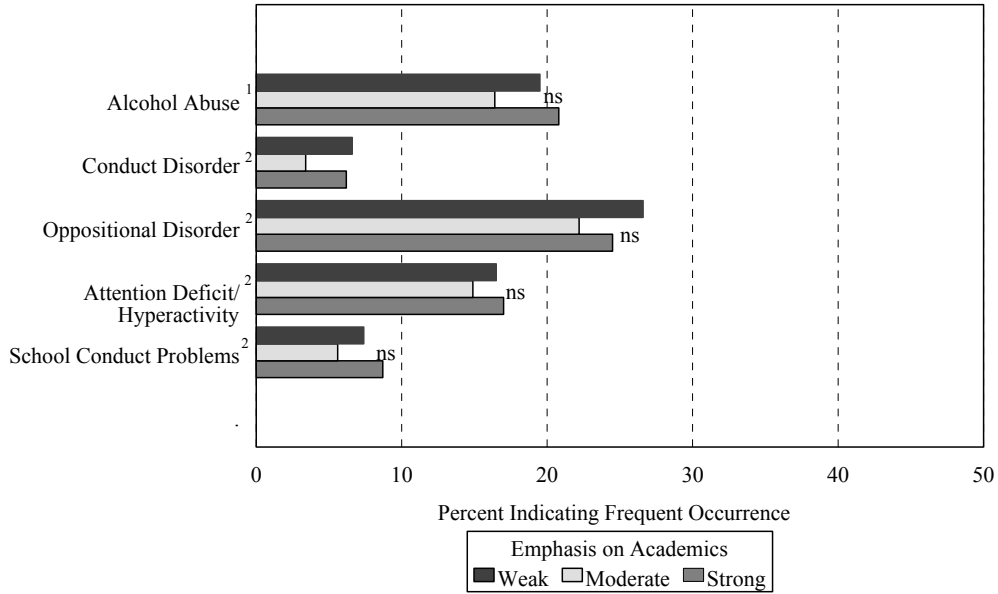
<sup>a</sup> Fear of Negative Evaluation from Peers

<sup>b</sup> Social Avoidance and Distress Specific to New Situations

<sup>c</sup> Generalized Social Avoidance and Distress

NOTE: Frequent occurrence defined as "most of the time" or "agree or strongly agree" (in case of depression) for 20-25 percent of items. Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

Figure 7a  
 Student Externalizing Behavioural Problems  
 by School Emphasis on Academics

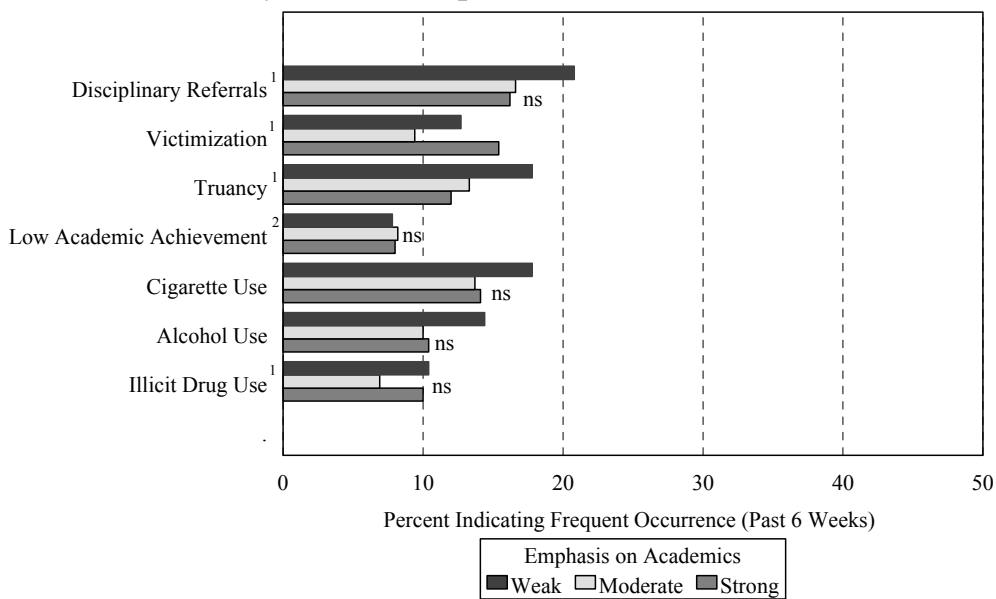


<sup>1</sup>Frequent occurrence defined as "2 or more times" in the past 6 weeks

<sup>2</sup>Frequent occurrence defined as "often or very true" for 20-25 percent of items in the past 6 months

NOTE: Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

Figure 7b  
 Student Academic and Behavioural Difficulties  
 by School Emphasis on Academics

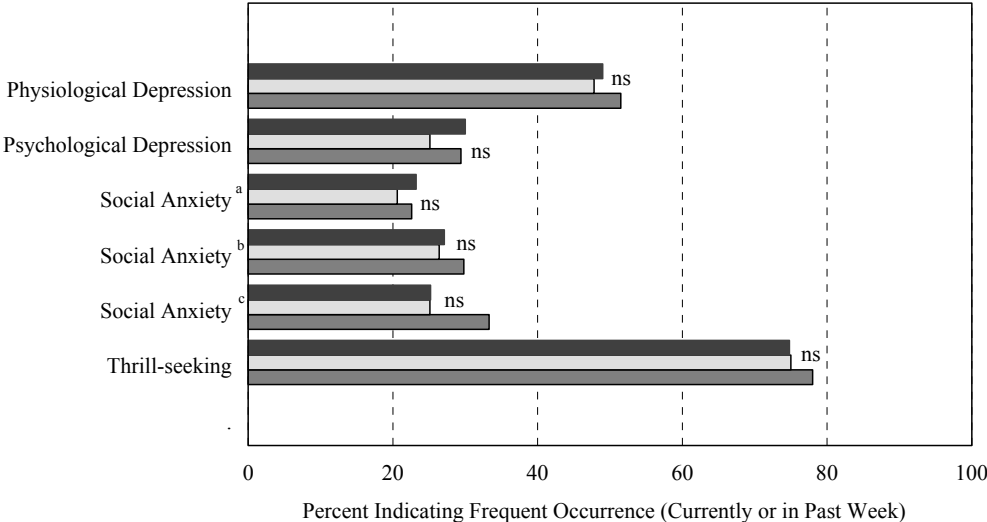


<sup>1</sup>Frequent occurrence defined as "2 or more times"

<sup>2</sup>Grade of C's or less in most subject areas

NOTE: Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)

**Figure 7c**  
**Student Internalizing Behavioural Problems**  
**by School Emphasis on Academics**



<sup>a</sup> Fear of Negative Evaluation from Peers

<sup>b</sup> Social Avoidance and Distress Specific to New Situations

<sup>c</sup> Generalized Social Avoidance and Distress

NOTE: Frequent occurrence defined as "most of the time" or "agree or strongly agree" (in case of depression) for 20-25 percent of items. Unless otherwise stated, all results are significant at  $p < .01$  (ns refers to non-significant result)