The Prevalence of Anxiety Among Middle and Secondary School Students in Canada

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ABSTRACT

Objectives: Adolescents’ anxiety is associated with individual and contextual characteristics. The purpose of this study is to estimate the prevalence of anxiety among adolescent youth in grades 6 to 12 and determine whether it is related to socio-economic status and perceptions of learning skills and challenges.

Methods: Nationally representative cross-sectional data from the Tell Them From Me survey – Fall 2008 assessment – were used for this study. Item response theory estimates and a cut-off point for anxiety were developed from six Likert items pertaining to anxiety. Csikszentmihalyi’s theory of flow was applied to create four different combinations of learning processes and students’ skills.

Results: Females had a higher prevalence of anxiety than males in both middle and secondary schools. The prevalence of anxiety did not vary substantially among schools for either middle or secondary schools. Less than one half of Canadian students can be considered “in flow”, that is, feeling confident in their skills and challenged in their classes. Students who lacked confidence in their skills were nearly twice as likely to experience anxiety.

Conclusion: The relation between students’ skills, the challenges presented to them at school and anxiety problems deserves attention by parents and school staff. Further research could examine the relationship between direct assessments of students’ skills and measures of teaching practices and school policies.

Key words: Anxiety; adolescents; skills; learning challenge; flow; TTFM survey; schools

About one half of adult mental health issues start before the mid-teens, and often treatment does not occur or is delayed until well into adulthood.1,2 The number of children experiencing mental health problems is significant, and these problems affect both their quality of life and their ability to benefit from their school experience. For example, results from Canada’s National Longitudinal Survey of Children and Youth (NLSCY) indicate that the prevalence of anxiety problems among children and youth ranges from 2% to 12%, with a lower prevalence among children aged 2 to 11 according to parents’ assessments and a higher prevalence among adolescents aged 10 to 15 according to self-assessment. The 2003 US National Survey of Children’s Health assessed emotional, cognitive and behavioural problems in over 100,000 children and youth 0 to 17 years of age and found that children with chronic emotional, behavioural and developmental problems that persisted for at least a year missed more than 10 days per year at school, three times that of their peers without these problems.

Children and adolescents constantly face challenges, such as trying to look strong and beautiful to their peers, succeeding in sports and recreational activities, achieving good grades and developing positive relationships. School is the place where children spend most of their daily hours, trying to meet these challenges while they define their identities. Recently, researchers and educators have directed attention to the relation between the quality of learning environments – particularly effective teaching – and problems experienced by students in middle and secondary schools, such as disengagement, dissatisfaction with their schooling experience, and dropping out.4-6 Relatively little attention has been paid to the role of schools in identifying mental health problems or helping to alleviate them. For example, in most countries studied in the Programme for International Student Assessment (PISA), there was considerable variation among schools in students’ academic achievement and sense of belonging at school.4 Some of this variation was attributable to measurable aspects of classroom and school climate, and structural features of the school system. However, PISA and other large-scale international studies do not consider variation in mental health outcomes such as anxiety and depression. In this paper we consider whether schools may be differentially successful in limiting anxiety by developing effective teaching and learning approaches.

Csikszentmihalyi’s theory of flow7 provides a useful tool for considering emotional outcomes resulting from different combinations of learning processes and students’ skills. Csikszentmihalyi8 describes “flow” as deep absorption in an activity that is intrinsically interesting. Flow is believed to occur at the point of balance between the challenge inherent in the task at hand and the skills required to accomplish it. As the theory applies to education,
Csikszentmihalyi suggested four general relations between skills and instructional challenge in students’ experience of learning:

- Low-skills/low-challenge – students are more likely to feel apathetic about learning when they find themselves in learning situations that involve tasks for which they have low skills and which are of low challenge. These students tend to give up because school work is inconsequential.

- Low-skills/high-challenge – students are more likely to feel worried in learning situations because they have low confidence in their skills and the tasks they are asked to perform are perceived as too challenging.

- High-skills/low-challenge – students are more likely to feel that the challenges of learning are too few in relation to their skills, and they are unable to identify how they can make the experience more challenging. This leads to boredom and disengagement because students see little relevance in what they are asked to learn.

- High-skills/high-challenge – students generally feel that their skills and the challenges of the tasks they are asked to perform are in balance. These students frequently experience flow.

According to this theory, when students experience flow the relation between skills and challenge is symbiotic, and skills are neither too low nor too high in relation to the challenge at hand. Student engagement is conceived as the culmination of concentration, interest and enjoyment, as opposed to boredom or apathy.9

In this study we estimate the prevalence of anxiety among male and female students and determine the extent to which it varies among middle and secondary schools. We use data extracted from the Tell Them From Me (TTFM) survey. TTFM (The Learning Bar Inc., 2009) is an evaluation system designed to meet the ongoing needs of teachers, principals and school district administrators. It includes a set of dynamic, web-based student surveys and a teacher survey, which assesses various aspects of student engagement and wellness together with the most important aspects of a school’s learning climate. From indicators in this survey, we asked whether experiencing anxiety is related to children’s socio-economic status and their perceptions of skills and challenges, as described by Csikszentmihalyi.

METHODS

TTFM survey data from the fall term of 2008 were analyzed applying hierarchical linear modelling (HLM) for dichotomous outcomes.10 TTFM is Canada’s largest school survey, with over 170,000 students completing the survey annually. The data extracted for this study were from 5,650 children attending 70 middle schools and 6,274 children attending 46 secondary schools. A separate analysis of the socio-economic characteristics of the children in the sample, based on a match between their postal codes and census 2006 data, revealed that the TTFM sample had a similar distribution of socio-economic status to that of all Canadian children.

The TTFM measure for anxiety is based on a set of six Likert items to which students respond on a 4-point scale: 0 = “Never or hardly ever”, 1 = “About once a week”, 2 = “About 2 or 3 times a week” and 3 = “Every day or almost every day”. The scores were transformed into a continuous variable using a model from Samejima’s item response theory.11,12 The cut-off point for the continuous measure of anxiety was defined as the value corresponding to a response pattern of 222111; for example, a youth was considered anxious if he or she answered “about 2 or 3 times a week” to the three easiest items and answered “about once a week” to the three most difficult items.

Skills and intellectual challenge dimensions were assessed with 12 Likert statements regarding the extent to which students felt challenged in their language arts and math classes, and whether they felt confident in their skills in these subjects. Cut-off points for each scale were used to construct a 2-by-2 matrix of challenge versus skills. The analysis also used the TTFM measure of socio-economic status, which is derived from student data on parents’ education and a set of educational and cultural possessions in the home.

RESULTS

Figure 1 illustrates the prevalence of anxiety by grade and sex for the full sample of 11,924 students. It shows that females in middle school displayed much higher levels of anxiety than their male...
peers. The prevalence of anxiety among males did not change substantially during middle and secondary school, whereas among females it rapidly declined from grade 7 to grade 12.

Estimates of the prevalence of anxiety in each school were made using a two-level hierarchical logistic regression model. Figure 2 shows the range in the prevalence among middle and secondary schools using notched box plots. The range of prevalence in middle schools was small, with the majority of schools having a prevalence within 2% to 3% of the median prevalence, which was about 13.2%. In secondary schools the range was even smaller, all schools having a prevalence between 10% and 12%. Estimates of the proportions of variation within and among schools revealed that more than 99% of the variance in anxiety was within schools and less than 1% between schools.

Table 1 shows the percentage of middle and secondary school adolescents in each of the quadrants of Csikszentmihalyi's typology. Even though a large proportion of students in middle and secondary school were “in flow” (high skills and high challenge), more than half of them were located in one of the three suboptimal quadrants.

The percentage of students in flow was approximately 45% in both middle and secondary schools. However, the percentage of females in the high-skills/low-challenge quadrant was higher than that of males in both middle and secondary schools, whereas more males than females were in the low-skills/high-challenge quadrant.

Table 2 provides the results of a two-level hierarchical logistic regression model analysis with anxiety regressed on sex, socio-economic status and skills-challenge profile. The analysis was conducted separately for middle and secondary schools. The results indicate that females were more likely than males to experience anxiety, as was shown in Figure 1. Higher socio-economic status was a protective factor for females in middle schools and for both sexes in secondary schools. Youth who had high skills but low levels of challenge were less likely to experience anxiety in both middle and secondary schools. However, youth with low skills were much more likely to experience anxiety, irrespective of their level of challenge. Those in the low-skills/high-challenge quadrant had the greatest risk of experiencing anxiety, consistent with Csikszentmihalyi’s hypothesis. We also examined interactions between the skills-challenge variables and sex and socio-economic status; although minor changes in the size of the coefficients were observed, the interaction terms were not statistically significant. The results of the model with interaction terms are presented in Table 3; however, we focus on the results displayed in Table 2 in our discussion.

**DISCUSSION**

This study examined the prevalence of anxiety among males and females in a large sample of students who completed the TTFM student survey in the fall of 2008. Four key findings emerged from the analysis.

First, females had a higher prevalence of anxiety than males in both middle and secondary schools. The gap was larger among middle-school students. These results are consistent with previous research based on longitudinal data from the NLSCY.13,14

Second, the prevalence of anxiety did not vary substantially among schools for either middle or secondary schools. The initial goal of our analysis was to assess whether particular school factors, such as classroom disciplinary climate or teacher-student relations, were associated with the prevalence of anxiety across schools. However, the findings provide strong evidence that student anxiety is largely a within-school phenomenon: less than 1% of the variation in the TTFM sample was among schools. This means that school-based interventions aimed at reducing the prevalence of anxiety need to be universal rather than targeted towards a certain set of schools.15

Third, less than one-half of Canadian students could be considered “in flow”, that is, feeling confident in their skills and challenged in their classes. This general finding was reported earlier by the Canadian Education Association as part of its project called, “What did you do in school today?”16 Also, nearly 30% of students reported having low levels of skills, which is consistent with findings from large international studies, such as PISA.

Fourth, students who lacked confidence in their skills were more likely to experience anxiety. Consistent with Csikszentmihalyi’s theory, those with low skills and high challenge were at greatest risk; however, skill level was a much more important risk factor.
than level of challenge. A countervailing finding was that among youth with high skills, those with low levels of challenge were less likely to experience anxiety than those with high levels of challenge.

A strength of the data provided by the TTFM evaluation system is that they include the full population of students of schools using the student survey. The system also furnishes data that are longitudinal at the school level, enabling schools to track progress on key outcomes. A limitation of this study is that it was not possible to link data on students’ academic achievement to the data on students’ mental health outcomes. Although this would require a separate study, it would provide a stronger purchase on the relations between skills and challenge and their effects on students’ well-being.

REFERENCES