Adolescent Behavioral, Affective, and Cognitive Engagement in School: Relationship to Dropout

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ABSTRACT

BACKGROUND: High school dropout represents an important public health issue. This study assessed the 3 distinct dimensions of student engagement in high school and examined the relationships between the nature and course of such experiences and later dropout.

METHODS: We administered questionnaires to 13,330 students (44.7% boys) from 69 high schools in the province of Quebec (Canada). During 3 consecutive high school years, students reported their behavioral, emotional, and cognitive engagement to school. Information on later dropout status was obtained through official records.

RESULTS: Although many adolescents remained highly engaged in high school, one third reported changes, especially decreases in rule compliance, interest in school, and willingness to learn. Students reporting low engagement or important decrements in behavioral investment from the beginning of high school presented higher risks of later dropout.

CONCLUSION: School-based interventions should address the multiple facets of high school experiences to help adolescents successfully complete their basic schooling. Creating a positive social-emotional learning environment promises better adolescent achievement and, in turn, will contribute to a healthier lifestyle.

Keywords: adolescent health; dropout; psychosocial development; school engagement; school connectedness.


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It is common knowledge that youngsters who finish high school chart a developmental course toward a productive lifestyle in adulthood. As such, dropping out of high school has consequences for public health. These consequences include less lifetime earnings, more risky health behaviors and attitudes, and poorer mental health. Dropout rates vary in time, between countries, and according to definitions. Between 2004 and 2006, 9.3% of 16- to 24-year-old Americans and 9.8% of 20- to 24-year-old Canadians were not enrolled in high school and had not earned a high school diploma. In both countries, the dropout rate was higher for males than females and for youth coming from lower socioeconomic backgrounds.

The impact of school dropout becomes more daunting when people become parents and raise children. Parental socioeconomic status transmits a multitude of intergenerational risks and remains consistently robust in predictions of child achievement and academic attainment. In light of such consequences to both the individual and society, what might be the process that leads to dropout?

Prior to dropping out, many youth report a gradual psychosocial disengagement process from school-related activities and demands. This process begins in early schooling and evolves over the years in response to the transaction between the individual and the environment. When some students become alienated by school, they withdraw and eventually dropout. In such cases, dropout represents the absolute sign of a misfit between student needs and expectations and school demands and benefits.

For several decades, studies have identified individual, familial, social, and academic predictors of disengagement in youth. Risk factors include being male, socioeconomically disadvantaged, with a personal and family history of underachievement, conduct problems, and antisocial peer associations. Their parents often use ineffective childrearing practices and have low educational aspirations for their children. Nevertheless, many of these students will live quite different psychological experiences in school, with some surpassing expectations and some not.

Adolescence is a developmental period characterized by social, behavioral, cognitive, and emotional transitions. During this period, engagement and academic motivation significantly decline for the majority of students. There are a number of students presenting academic or psychosocial difficulties who will eventually withdraw from school. Who are these youths? How does their school engagement and motivational experience change over the years? Unlike risk factors such as sex or IQ, student engagement represents a dimension that can intuitively be modifiable. This makes it a characteristic that can easily become the target of preventive intervention. Identifying the nature and course of engagement for students at risk of dropping out represents an essential step for designing and implementing successful school-based prevention strategies that will, over the long run, contribute to adolescent health and well-being.

Two main considerations become important when studying the flow of changes in student engagement over time. First, we need to consider the multiple facets of student engagement. Second, research needs to consider that not all youngsters chart the same developmental life course. Some students will evolve in a similar way, yet others will experience distinct changes in different aspects of engagement.

In this article, we consider 3 dimensions of student engagement as a psychological experience. Behavioral engagement concerns student conformity to classroom and school rules (eg, attendance and politeness). It also refers to student involvement in classroom work and discussions and in extracurricular activities. The affective dimension is defined by student feelings, attitudes, and perceptions toward school. It mainly addresses liking school, belongingness, interests, and general enthusiasm for learning. Finally, the cognitive dimension concerns student psychological involvement in learning (eg, perceptions of competency, willingness to engage in effortful learning, and task-oriented goals) and use of self-regulation strategies (eg, memorization, task planning, and supervision).

Typically, student engagement is assessed as a general experience, with little or no consideration for group and individual differences. Traditionally, studies have used a populational, cross-sectional design. We contend that approaching student engagement as a process characterized by several dimensions would greatly advance our understanding of why some youth dropout and why some do not.

Most research on student engagement fails to consider its multidimensionality or the nature and course of its development. Because student behaviors, emotions, and cognitions are shaped in concert throughout development, research ought to assess the joint development of these facets of psychological experience for both individuals and groups. Further, because the same outcome may result from multiple pathways, modeling experiences of behavioral, affective, and cognitive engagement would represent an important step in understanding the specific mechanisms involved in not completing high school as a developmental milestone. This knowledge will support the development of tools and programs for at-risk students, according to their different needs.

This study identifies distinct trajectories of behavioral, affective, and cognitive engagement during adolescence. We then examine the relationships between these pathways and prospective dropout. On one hand, we expected to identify a large trajectory where
students reported relatively high and stable levels of engagement over high school. Based on previous findings, these students might be less inclined to withdraw from school. On the other hand, we also expected to identify students with distinct pathways of behavioral, affective, and cognitive engagement that might present higher risks of dropping out.

**METHODS**

**Subjects and Procedure**

Data were drawn from the New Approaches New Solutions (NANS) data set, which comprises over 40,000 French-speaking participants from 69 low socioeconomic status (SES) high schools across the province of Quebec (Canada). We retained 13,330 students (44.7% boys) for whom engagement data were available for a minimum of 2 years.

This sample was homogeneous in terms of ethnicity (89.2% students born in Quebec) but remains representative of Quebec population. This research obtained institutional review board approval in spring 2002. In the fall of the same year, we obtained parental and children consents to participate in the study. Overall, 77.4% of eligible children agreed to participate. Attrition analyses revealed that compared with the larger sample, adolescents in this subsample had less educated mothers, lower academic achievement, were more often born outside Quebec, and were more likely to have repeated a grade.

Our analyses included data from secondary 1 (grade 7) to secondary 5 (grade 11) over 3 annual assessments (ie, spring 2003 to spring 2005). Self-report questionnaires were distributed to participants in classrooms by teachers and trained graduate students at each assessment.

**Instruments**

**Student Engagement.** Student engagement consists of a 3-dimensional structure. The affective and cognitive dimensions were measured on a 7-point Likert scale. The 6-item affective dimension ($\alpha = .83$) assessed student enjoyment and interest in school-related tasks (eg, “Do you like school?”); whereas the 5-item cognitive dimension ($\alpha = .88$) evaluated student willingness to learn in language arts (French) and mathematics (eg, “How much effort are you prepared to invest in mathematics?”). The behavioral engagement factor taps 2 concepts measured on a 4-point Likert scale: attendance at school and school discipline ($\alpha = .65$) (eg, “Since the beginning of the school year, have you disrupted the class on purpose?”). Scores on this factor were transformed to fit the format of the 2 other dimensions. The final construct was built using student mean on behavioral, affective, and cognitive engagement at each assessment.

**School Dropout.** Information on dropout status was obtained through official records. Students who never obtained a high school diploma and who were not enrolled in any school in the province of Quebec at the end of September 2005 were identified as dropouts. Out of the 13,300 students, 404 students (3%) were eventually identified as dropouts between age 15 and 17.

**Covariates.** Information on student gender, age, and placement in special class was obtained from official records. Seven hundred and seventeen students (5.4%) were placed in special classes. Participants also reported their grades in mathematics and language arts (French) and their mother’s highest level of education. Student IQ was estimated using the Standard Raven Progressive Matrices for adolescents, which is a widely accepted indicator of nonverbal IQ and general intelligence.

**Study Design**

The NANS comprises 3 longitudinal cohorts (cohort 1: ages 12, 13, and 14; cohort 2: ages 13, 14, and 15; cohort 3: ages 14, 15, and 16). In order to generate a better representation of youth engagement throughout adolescence, we used a longitudinal accelerated design, thus merging the 3 cohorts into 1 large data set from ages 12 to 16.

**Data Analysis**

Our aim was to examine how student experiences of behavioral, affective, and cognitive engagement develop in high school and how these relate to dropout. Multiple-process growth mixture modeling (GMM) was implemented in MPlus to identify subgroups of individuals with quantitatively and qualitatively distinct trajectories on each aspect of student engagement. Generally speaking, GMM can be thought of as a combination of traditional growth modeling and latent class analysis. Like traditional growth modeling, GMM estimates growth parameters (ie, intercept and slope) based on repeated measures of a developmental process. However, GMM does not assume that the distribution in the population of individuals can be represented by a single multivariate normal distribution. GMM serves the same purpose as traditional cluster analysis, that is, to identify subgroups of individuals who belong to different classes, based on a series of indicators.

In the context of GMM, a “latent class” refers to a group of individuals displaying similar developmental trajectories. That is, this group has a similar initial level (intercept) and a similar growth shape and rate (slope). The GMM framework also allows the inclusion of covariates and a distal outcome directly into the models.
RESULTS

We tested up to 11 different models. In all models, an intercept and linear and quadratic slopes were specified, and time-invariant covariates were included and allowed to influence latent growth parameters (ie, intercept and slope) as well as the categorical latent variable (ie, class membership). The mean of these growth factors were the only parameters allowed to vary across classes. Correlations between temporally adjacent residuals measurement variances were also estimated.

On the basis of the different fit statistics, we opted for a 6-class model. Although the information criteria (AIC, BIC, and ABIC) consistently decreased as the number of classes increased, this decrease stabilized between a 6- and 7-class model. The LMR-LRT, the BLRT, and the entropy index of .72 also favored a 6-class model over a 7-class model. Moreover, the 6-class solution was theoretically more interesting than the 5-class alternative because it considered a late generally inclining group as the sixth class.

The Normative Course of Student Engagement

Figure 1 shows the mean predicted scores in behavioral, affective, and cognitive engagement for the 6 trajectory classes. Table 1 reports student characteristics in each group. The first class, the normative trajectory, groups the majority of students (64.6%). It comprised more girls (58.5%) than boys and is the most stable. Students in this group are characterized by a constant level of engagement, with only a small and slow decline of behavioral and cognitive engagement. For this group, behavioral engagement showed the highest intensity of the 3 while affective engagement showed the lowest intensity.

Predictors of Atypical Courses of Student Engagement

The predictive effects of covariates are reported as odds ratios (ORs) in Table 2. Results generally indicated that, compared with the normative trajectory, used as the reference category, students from the non-normative classes presented many distinctions: they were more often boys; presented higher risk of having low IQ; low grades in French and mathematics; and of being placed in special classes.

Finally, looking at the chances of dropping out, students from all non-normative groups presented...
Figure 1. Mean Predicted Behavioral, Affective, and Cognitive Engagement Scores by Profile

<table>
<thead>
<tr>
<th>Profile</th>
<th>Behavioral</th>
<th>Affective</th>
<th>Cognitive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normative Group (64.6%)</td>
<td>6</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Early Partially Declining Group (12.2%)</td>
<td>5</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Late Partially Declining Group (7.8%)</td>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Late Generally Inclining Group (5.7%)</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Transitory Partially Inclining Group (5.2%)</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Early Generally Declining Group (4.5%)</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 1. Distribution of Adolescents by Student Engagement Trajectories by Gender and Dropout Status

<table>
<thead>
<tr>
<th></th>
<th>Normative Trajectory</th>
<th>Early Partially Declining</th>
<th>Late Partially Declining</th>
<th>Late Generally Inclining</th>
<th>Transitory Partially Inclining</th>
<th>Early Generally Declining</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total sample</td>
<td>8591 (64.6%)</td>
<td>1625 (12.2%)</td>
<td>1035 (7.8%)</td>
<td>760 (5.7%)</td>
<td>697 (5.2%)</td>
<td>592 (4.5%)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Girls</td>
<td>5030 (58.5%)</td>
<td>864 (53.2%)</td>
<td>366 (35.4%)</td>
<td>427 (56.2%)</td>
<td>376 (53.9%)</td>
<td>289 (48.8%)</td>
</tr>
<tr>
<td>Boys</td>
<td>3561 (41.5%)</td>
<td>761 (46.8%)</td>
<td>669 (54.6%)</td>
<td>333 (43.8%)</td>
<td>321 (46.1%)</td>
<td>303 (51.2%)</td>
</tr>
<tr>
<td>Special needs education</td>
<td>319 (3.7%)</td>
<td>53 (7.1%)</td>
<td>109 (10.5%)</td>
<td>60 (8.0%)</td>
<td>124 (16.9%)</td>
<td>64 (10.8%)</td>
</tr>
<tr>
<td>Total dropouts</td>
<td>89 (1.0%)</td>
<td>80 (4.9%)</td>
<td>116 (11.2%)</td>
<td>46 (6.1%)</td>
<td>50 (7.2%)</td>
<td>23 (3.9%)</td>
</tr>
<tr>
<td>Girls</td>
<td>42 (47.2%)</td>
<td>36 (45.0%)</td>
<td>42 (36.2%)</td>
<td>30 (65.2%)</td>
<td>26 (52.0%)</td>
<td>7 (30.4%)</td>
</tr>
<tr>
<td>Boys</td>
<td>47 (52.8%)</td>
<td>44 (55.0%)</td>
<td>74 (63.8%)</td>
<td>16 (34.8%)</td>
<td>24 (48.0%)</td>
<td>27 (69.6%)</td>
</tr>
</tbody>
</table>

n = 13,300.

Table 2. Results of the Multinomial Logistic Regression (Final Model): Predictors of School Engagement Trajectories Membership

<table>
<thead>
<tr>
<th></th>
<th>Early Partially Declining</th>
<th>Late Partially Declining</th>
<th>Late Generally Inclining</th>
<th>Transitory Partially Inclining</th>
<th>Early Generally Declining</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 12 Predictors</td>
<td>OR (95% Cl)</td>
<td>OR (95% Cl)</td>
<td>OR (95% Cl)</td>
<td>OR (95% Cl)</td>
<td>OR (95% Cl)</td>
</tr>
<tr>
<td>IQ</td>
<td>1.00* (0.99–1.01)</td>
<td>1.00* (0.99–1.01)</td>
<td>0.99 (0.98–1.00)</td>
<td>0.99 (0.98–1.00)</td>
<td>0.99 (0.98–1.00)</td>
</tr>
<tr>
<td>Sex</td>
<td>0.96 (0.72–1.03)</td>
<td>0.52** (0.41–0.65)</td>
<td>0.92 (0.70–1.19)</td>
<td>0.91 (0.75–1.10)</td>
<td>0.73* (0.60–0.91)</td>
</tr>
<tr>
<td>Maternal education</td>
<td>1.03 (0.98–1.10)</td>
<td>0.99 (0.92–1.06)</td>
<td>0.95 (0.88–1.03)</td>
<td>0.97 (0.90–1.05)</td>
<td>0.94* (0.88–1.00)</td>
</tr>
<tr>
<td>French grades</td>
<td>0.98*** (0.97–0.99)</td>
<td>0.98*** (0.97–0.99)</td>
<td>0.97*** (0.96–0.99)</td>
<td>0.97*** (0.96–0.98)</td>
<td>0.99*** (0.99–1.00)</td>
</tr>
<tr>
<td>Math grades</td>
<td>0.99* (0.98–1.00)</td>
<td>0.99 (0.98–1.00)</td>
<td>0.98** (0.96–0.99)</td>
<td>1.00 (0.99–1.01)</td>
<td>1.00 (0.99–1.01)</td>
</tr>
<tr>
<td>Special education</td>
<td>1.49 (0.96–2.32)</td>
<td>1.91 (0.91–1.99)</td>
<td>1.57 (0.95–2.60)</td>
<td>1.46 (0.92–2.31)</td>
<td>2.19*** (1.39–3.47)</td>
</tr>
</tbody>
</table>

All covariates are significant predictors based on chi-square test from the total model. The reference group is the normative type. OR, odds ratio with 95% confidence intervals (CIs) in parentheses.

\[ \text{All } p < .10; ^* p < .05; ^{**} p < .01; ^{***} p < .001. \]
4 to 8 times higher risk of dropping out than their counterparts from the normative trajectory (OR from 4.85 to 8.13). Students from the late partially declining group showed the highest risk of dropping out, whereas those from the early partially declining trajectory showed the lowest risk.

**DISCUSSION**

Our results tell us that, in adolescence, youth live multiple changes contributing to their global experience in school. Consistent with previous studies, we found that in the long run, many engaged and successful students will graduate from high school while others, alienated and disengaged, will eventually dropout. Adolescents at risk of dropping out report behavioral, affective, and cognitive differences that affect their high school experience. Our findings clearly suggest that school-based interventions that aim to promote school completion by fostering mental health and well-being should be more aware of individual differences. Thus, considering the multiple facets of student psychological experiences suggest a distinct approach with different subgroup of youth, depending upon their high risk profile.

As expected, stable and positive educational pathways represent normative or typical youthful high school experiences. Generally speaking, many students reported consistent respect of rules, task enthusiasm, and willingness to learn over their high school lifetime. Yet, engagement did not operate identically for everyone. One third of adolescents experienced disengagement during high school. For many of these youth, the most remarkable change concerns their behaviors. At ages 12 and 13, they show up in class and comply with rules but afterward, their commitment dropped significantly.

In line with other authors, school withdrawal is accounted for by a confluence of risk factors. Our results showed that some individual and contextual characteristics were associated with disengagement patterns in high school. Not unexpectedly, being a boy, having low intellectual skills, and being placed in special education with a past history of underachievement was associated with disengagement over years. These changes, especially decreases in student engagement, contributed to dropout. Beyond important school, family, and demographic characteristics, students reporting the most significant increase in misbehaviors, and the lowest level of behavioral compliance at age 12 presented the highest dropout risk. Because most students report a high level of compliance at the beginning of adolescence, those who are behaviorally disengaged at earlier ages thus represent an important target group for intervention.

Our evidence also suggests that, independently of behavioral disengagement, the risk that students withdraw before completing high school increases when they report disconnectedness on multiple facets of their school experience. Even though some students reporting low school interest and willingness to learn comply to the rules, all highly motivated students avoid breaking rules. Because adolescents invest in academic tasks to the extent that they find these tasks valuable and interesting, efforts to sustain and nurture student values and interest in school could thus promote both their behavioral compliance and an overall positive school experience. These efforts may increase student chances of positive academic outcomes and also favor their social-emotional well-being.

**Limitations**

The present study had several limitations. First, our data capitalized on 3 points in time and applied an accelerated design over the age range available (ages 12–16). Although this is clearly a strength, the number of students within each age group varies slightly and is smaller at ages 12 and 16. Second, the generalization of our findings is restricted to low SES schools in Quebec. Third, the cognitive component does not integrate important concepts such as how competent the youths feel about themselves and their use of self-regulation strategies. Considering these limitations, the inclusion of a more complete set of cognitive engagement measures could have resulted in a more exhaustive developmental picture of student engagement. Fourth, dropout was assessed only at the scheduled time of high school completion, so we did not have information on youth who went back to school and completed thereafter. Finally, the number of dropouts in our sample was also quite limited. Compared with most studies that tend to assess dropout at age 20, we measured dropout status when youth were aged from 15 to 19 years old (i.e., 3 years after the first wave of data collection).

**Conclusions**

Findings from this study are sufficiently important to justify further work that clarifies the contribution of each specific form of engagement to student dropout. Future research should also investigate the nature and course of student engagement earlier in development, such as school entry. Beyond individual characteristics, studies also need to investigate to what extent important contextual elements may interfere or contribute to student psychological experiences at school.

**IMPLICATIONS FOR SCHOOL HEALTH PROFESSIONALS**

There are a multitude of risk factors for less than optimal engagement. These include being male, low income, low cognitive abilities, and a personal and family history of conduct problems, antisocial peer...
associations, and underachievement in language arts and math. Developing our empirical knowledge of student engagement promises better avenues for intervention, given that, compared with variables that often cannot be changed, such as improving attendance in school and class discipline, liking school, and willingness to learn represents a promising focus and objective of programs that aim to circumvent dropout. By understanding the nature and course of student disengagement, this study underscores the pertinence of developing universal and tailored prevention and intervention approaches for at-risk students. Favoring their engagement in class will, in turn, promote their achievement and enhance their resilience. In demonstrating that highly motivated students are compliant and engage in learning, this research sheds light on socio-emotional well-being as the primary dimension that ought to be targeted by practitioners. By creating connectedness through individuals and positive climates in the schools, interventions are likely to promote student successful academic adjustment and future health. Indeed, prevention strategies may not be sufficient to catch the subtleties of psychological development during adolescence. Prevention efforts that foster school engagement will thus need to integrate distinct strategies that address student emotions, cognitions, and behaviors. Among the approaches that exist to promote student multidimensional engagement in school, the check and connect intervention program is promising. Through relationship building with mentors, systematic monitoring, timely and individualized interventions, and enhanced home-school communication and home support for learning, this program targets both student behavioral and psychological experience in school.

Altogether, youth who present low engagement at age 12 or who show a rapid decline in school discipline in the first 2 years of high school should be a high-priority target. As in the check and connect program, this research suggests that school-based intervention strategies ought to consider student-specific characteristics and needs within an ecological perspective. At a societal level, giving young people the opportunity to develop in a positive educational environment represents a significant investment both in terms of personal well-being and in the general health orientations of futures generations.

REFERENCES


