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## Assessing the Connection Between Health and Education: Identifying Potential Leverage Points for Public Health to Improve School Attendance

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### Abstract

**Objectives**—We examined multiple variables influencing school truancy to identify potential leverage points to improve school attendance.

**Methods**—A cross-sectional observational design was used to analyze inner-city data collected in Los Angeles County, California, during 2010 to 2011. We constructed an ordinal logistic regression model with cluster robust standard errors to examine the association between truancy and various covariates.

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#### Contributors

M. D. Wong serves as the principal investigator of the Reducing health Inequities through Social and Educational change (RISE) study. L. N. Gase, T. Kuo, and M. D. Wong conceptualized the research questions and conceptual model for this study. L. N. Gase led the study analyses. All authors provided critical input and insight into the development of the article.

#### Human Participant Protection

The Reducing health Inequities through Social and Educational change (RISE) study was approved by the University of California, Los Angeles institutional review board. Written informed consent was obtained for each participant.

**Results**—The sample was predominantly Hispanic (84.3%). Multivariable analysis revealed greater truancy among students (1) with mild (adjusted odds ratio [AOR] = 1.57; 95% confidence interval [CI] = 1.22, 2.01) and severe (AOR = 1.80; 95% CI = 1.04, 3.13) depression (referent: no depression), (2) whose parents were neglectful (AOR = 2.21; 95% CI = 1.21, 4.03) or indulgent (AOR = 1.71; 95% CI = 1.04, 2.82; referent: authoritative parents), (3) who perceived less support from classes, teachers, and other students regarding college preparation (AOR = 0.87; 95% CI = 0.81, 0.95), (4) who had low grade point averages (AOR = 2.34; 95% CI = 1.49, 4.38), and (5) who reported using alcohol (AOR = 3.47; 95% CI = 2.34, 5.14) or marijuana (AOR = 1.59; 95% CI = 1.06, 2.38) during the past month.

**Conclusions**—Study findings suggest depression, substance use, and parental engagement as potential leverage points for public health to intervene to improve school attendance.

Truancy, defined as any intentional unauthorized or illegal absence from school, is associated with a variety of adverse behavioral and health outcomes, including school dropout, crime, violence, incarceration, adolescent pregnancy, and substance abuse.<sup>1,2</sup> Truancy is a major problem in the United States. Nationally, 11% of students report skipping school in the past month.<sup>3</sup> In California, the truancy rate—the percentage of students who missed more than 30 minutes of instruction without an excuse for 3 or more days in a given school year—was 28% during the 2009–2010 school year.<sup>4</sup> Truancy rates are frequently higher among Black and Hispanic youths, as compared with Whites, and among youths from lower-income households.<sup>3</sup>

School truancy is a complex phenomenon often resulting from a variety of factors including (1) community and home environments; (2) social relationships, including relationships with parents, teachers, and peers; (3) school variables such as student-to-teacher ratio, educational style, safety, and disciplinary procedures; and (4) individual characteristics such as students' level of engagement with learning, academic performance, risk behaviors (e.g., substance abuse), and mental health problems.<sup>2,5,6</sup> The multifaceted nature of this phenomenon has attracted a number of researchers, as well as professionals, from different sectors (e.g., criminal justice, education, and community-based organizations) to study this problem. However, public health representation is often missing from this important dialogue. In spite of emerging evidence suggesting the interdependence between education and health, only a paucity of public health authorities have regularly engaged school districts, local law enforcement, or the courts to address this social determinant of health.<sup>5,7</sup>

Despite significant investments by researchers, practitioners, schools, and policymakers to address truancy over the past several decades, there is little evidence that any positive impact has been made to improve school attendance.<sup>8</sup> Many non-health sector researchers have called for the use of interdisciplinary models to reduce school truancy. Beyond modifying student factors, these models focus on a broader catchment, to include family, school, and community interventions.<sup>9,10</sup> However, in spite of growing interest, much remains unknown about the key steps, design, or program features that are necessary to effectively implement cross-sector strategies. Identifying leverage points where nontraditional, noneducation partners (e.g., public health) can intervene represents a critical need.

Although previous research has examined the association between truancy and a variety of modifiable school, student, and health characteristics, most have collected data only on a narrowly defined set of risk factors, independent from one another.<sup>3,11,12</sup> Even among studies that have concurrently considered multiple risk factors for truancy, the analyses have often excluded important information about leverage points for nontraditional partners to act.<sup>13,14</sup> The present study helps fill these gaps in public health research and practice, examining the relative importance of different school, student, and health-related variables in influencing school truancy. This study focused on inner-city, low-income youths, a group that is particularly vulnerable to being chronically truant, dropping out of school, and experiencing health disparities.<sup>4,15</sup>

## METHODS

To examine the relative importance of different school, student, and health-related characteristics that can influence school truancy, this study used a previously collected data set which contained a comprehensive set of variables known to influence school attendance. The data set has added value to public health research and practice in that the sample is largely low-income and Hispanic.

### Data Source

We analyzed data from the Reducing health Inequities through Social and Educational change (RISE) study to examine key correlates of chronic truancy in a targeted student population. Conducted during 2010 to 2011, RISE utilized a cross-sectional quasi-experimental design to examine the relationship between educational variables and health outcomes in a population of students who had applied to one of 3 high-performing charter public schools in Los Angeles County, California. Application to the schools was open to all youths in the catchment area and only required parents to submit a name and address. RISE included applications to the schools processed during 2007 to 2010. Data collection was performed on a split sample—those students who were admitted to the charter schools and those who were not but attended regular public schools nearby. Admission to the charter schools was based on a random lottery. RISE researchers randomly sampled from a pool that included those who were and were not randomly selected for admission. Those who accepted an offer to attend a private school or another charter school (i.e., a school other than one of the 3 charter schools in the study) were excluded.

All selected participants completed a 90-minute face-to-face interview, which collected information about risk behaviors, health knowledge and beliefs, self-concept, expectations for the future, parental involvement, engagement in school, and personal social network characteristics. Audio computer-assisted self-interviewing (CASI) was used to collect data on potentially sensitive topics, including substance use and other risky behaviors. Previous studies have found that audio CASI can improve the accuracy of reporting of sensitive items during face-to-face interviewing.<sup>16,17</sup> The research team obtained a certificate of confidentiality and informed all participants that their responses would not be shared with anyone.

Collectively, 934 interviews were completed with the split sample of students for a response rate of 73%. About half (49.7%) of the sample attended one of the 3 charter schools, 43.5% attended one of 68 public schools, 4.9% attended an alternative school (e.g., home school, continuation school), and 1.9% had dropped out. For the present analysis, we included students who responded affirmatively to the question “Are you presently enrolled in school?” This yielded a final sample of 915, after 19 cases were excluded.

### Variable Construction

**Outcome**—We derived the primary outcome of interest (school truancy) by using students’ response to the question, “In a typical month, I cut or skip class. . . .” Five response options for this question ranged from “never” to “10 or more times.” Those who responded “never” were classified as “not truant,” students who reported “1 or 2 times” were classified as “infrequent truants,” and students who reported “3 to 6 times,” “7 to 9 times,” or “10 or more times” were classified as “chronic truants.”

**Perceived environment**—The analysis included 3 measures of student perceptions of their school environment: the schools’ level of orientation toward college, the quality of students’ relationships with their teachers, and students’ perceived safety at school. The analysis also included 1 measure of student perceptions of their neighborhood environment. School environment was first assessed using a scale measuring school-wide future orientation toward college (i.e., the extent to which teachers, classes and other students were focused on preparing the student for college), summing together students’ responses to 5 items coded from 1 to 4 (“strongly disagree” to “strongly agree”).<sup>18</sup> Quality of relationship with teachers was derived from a scale measuring students’ perceptions of the extent of personal attention they receive from teachers.<sup>18</sup> To construct the measure, students’ responses to the 5 items coded from 1 to 4 (“strongly disagree” to “strongly agree”) were summed. Students’ perceptions of feeling safe at school were coded as “yes” or “no” depending on their response to the question “I feel safe at school” (original response options: strongly disagree, disagree, agree, strongly agree). Neighborhood environment was measured by using a 5 item scale that assessed the extent to which people in the neighborhood know and support each other.<sup>19</sup> To construct this measure, students’ responses to the 5 items, coded from 1 to 4 (“strongly disagree” to “strongly agree”) were summed.

**Social influences**—We included 2 social-influences measures in this study analysis: parenting style and peer influences. Parenting style was measured using a validated scale measuring general parenting style as well as parental involvement with schoolwork and parental expectations about academic achievements. Students’ responses to 10 questions were dichotomized in each of 2 measured dimensions: involvement and strictness.<sup>20</sup> Parents were then classified as authoritative (high involvement, high strictness), neglectful (low involvement, low strictness), authoritarian (low involvement, high strictness), or indulgent (high involvement, low strictness). Peer influences were measured based on students’ response to the question “how many of your close friends have dropped out of school before graduating.” We categorized subjects into 2 groups, those who responded “none of them” versus those who responded “some of them,” “most of them,” or “all of them.”

**Individual influences**—We included 4 individual-influenced measures in this study analysis: school engagement, mental health, substance use, and self-reported grade point average (GPA). School engagement was measured using the High School Survey of Student Engagement, a validated 16-item scale that measures cognitive, social, and emotional engagement.<sup>21</sup> For mental health, we assessed depression by using the 20-item Center for Epidemiological Studies-Depression measure,<sup>22</sup> which categorizes the student as not depressed (score <16), mildly depressed (score 16–26), or severely depressed (score > 27). Substance use was measured using any self-reported alcohol and marijuana use in the past 30 days. Finally, we asked students to report their GPA for the past school year.

### Statistical Analyses

We imputed missing data for 8 covariates (age, neighborhood quality, school-wide future orientation toward college, peer influences, depression status, alcohol and marijuana use, and GPA—each had missing data in < 2% of the sample) by using multiple imputations with chained equations, with 20 replicates.<sup>23</sup> The outcome of interest was included in the imputation model, but we did not include observations with missing outcome data (n = 6) in the final multivariable model. Because the outcome (school truancy) had 3 ordered levels (never truant, sometimes truant, and chronically truant), an ordinal logistic regression model was constructed to characterize its relationship with depression and other predictors (regressors). The Brant test of parallel regression assumption and a likelihood-ratio test of the proportionality of odds across response categories both supported the proportional odds assumption, indicating that the ordinal regression model was an appropriate analytic choice. An ordered logit on the multiple imputed data sets was conducted with cluster robust standard errors to adjust for the clustering of students in 71 schools.

Variable selection for inclusion in the ordinal logistic regression model was guided by the conceptual predictors of school truancy, as identified in the literature.<sup>10</sup> We included a limited number of demographic variables in the model to control for sociodemographic effects: age (as a continuous variable), gender, race/ethnicity, and whether at least 1 of the student's parents graduated from high school (as categorical variables). Because GPA, along with alcohol and marijuana use, might be endogenous with truancy, 3 versions of the model were generated to account for the possibility: (1) a model containing only demographic controls, (2) a model containing only exogenous variables (i.e., without GPA or alcohol and marijuana use; “reduced model”), and (3) a model containing all variables (“full model”).

Based on the results of the full model, the difference (predictive margin) in the probability of being “never truant” was calculated between (1) youths who were severely depressed and youths who were not depressed, (2) youths who had neglectful parents and youths who had authoritative parents, and (3) youths who had used alcohol in the past 30 days and youths who had not. Standard errors for the coefficients, predicted probabilities, and the predictive margins were calculated using combination rules as outlined by Rubin.<sup>24</sup> Parameter estimates were judged to be significant if the 2-tailed P value was less than 0.05. All calculations were performed using the Stata version 12.1 (StataCorp LP, College Station, TX).

## RESULTS

In the present analysis, more than a quarter (26.7%) of students reported skipping class at least once during the past month; 17.2% were infrequent truants whereas 9.5% were chronic truants (Table 1). Bivariate analyses suggested that all covariates were associated with truancy, including perceived environment variables (neighborhood quality; level of personal attention from teachers; students' perceptions of the extent to which teachers, classes, and other students were focused on preparing for college; feeling safe at school), social influence variables (having some close friends that dropped out, parenting style), and individual-level variables (student engagement, depression, GPA, and alcohol and marijuana use during the past 30 days; Table 2).

The reduced version of the ordinal regression model revealed that, after controlling for other covariates, school truancy was greater among students (1) with mild and severe depression, (2) whose parents were neglectful or indulgent, (3) who had at least some close friends who dropped out of school, and (4) who perceived teachers, classes, and other students as being less focused on preparing them for college (Table 3). In the full model (which included GPA and alcohol and marijuana use), truancy, after controlling for other covariates, was greater among students (1) with mild and severe depression; (2) whose parents were neglectful or indulgent; (3) who perceived teachers, classes, and other students as being less focused on preparing them for college; (4) who did not know their GPA or had a very low GPA; and (5) who used alcohol or marijuana during the past 30 days.

Postestimation results from the full model additionally suggested that, after controlling for other covariates, students who reported no depression had 11.4 percentage points (95% confidence interval [CI] = 0.0001, 22.69) higher probability of being “never truant” than students who reported severe depression, students who had authoritative (more strict and involved) parents had 24.4 percentage points (95% CI = 16.5, 32.2) higher probability of being “never truant” than students who had neglectful (less strict and involved) parents, and students who had not consumed alcohol in the past 30 days had 15.4 percentage points (95% CI = 4.2, 26.6) higher probability of being “never truant” than students who had consumed alcohol in the past 30 days.

## DISCUSSION

Although a number of studies in education have described important associations between truancy and a variety of school and student characteristics,<sup>3,11–14</sup> the present study is unique in its application of a public health perspective to the analysis of a comprehensive set of variables that might influence school truancy. Within this health-related context, evidence in support of strong associations between modifiable risk factors such as mental health, substance use, and parenting style can help to identify key leveraging points where nontraditional, noneducation partners can take action.

Clear opportunities exist for public health to increase its role in addressing mental health and substance use through school- and community-based interventions. In recent years, numerous experts and advocacy groups have called for enhancements and integration of school-based

mental health and substance abuse prevention and treatment programs as key components of a healthy and safe school environment.<sup>25,26</sup> Many existing child psychology interventions that intervene on absenteeism, such as the use of cognitive-behavioral therapy, have been criticized for their lack of focus on broader school and community-based factors that can have great influence on school attendance.<sup>10</sup> Comprehensive school-based mental health approaches (e.g., school-based mental health teams that proactively address individual student concerns while improving the general climate of schools) have shown positive impacts.<sup>27,28</sup> Emerging consensus among educators and school officials point to school-based health centers as a potentially viable vehicle for enhancing service integration, representing a nodal point for assessing multiple risk and protective factors associated with truancy, including school connectedness, academic engagement, depression management, and substance abuse prevention.<sup>5</sup>

With the growing focus on the social-ecological framework that emphasizes a comprehensive, multidisciplinary approach, public health has the opportunity to support interventions that couple health education to environmental and programmatic changes. In the area of substance abuse prevention, this could include using health marketing and countermarketing approaches to educate youths, informing alcohol- and drug-control policies, and providing technical assistance to help integrate substance abuse prevention and treatment components into school-, community-, and court-based truancy reduction programs.<sup>29</sup>

Engaging parents and guardians represents another key leverage point. The Centers for Disease Control and Prevention recommend family involvement as a key component of improving the health of children and adolescents.<sup>30</sup> Research has demonstrated the importance of intervening in early childhood to promote positive youth development.<sup>3</sup> Home visitation programs and parenting training programs have shown favorable effects, capable of reducing a variety of child and adolescent risk behaviors (e.g., sexual behavior, violence and delinquency, substance abuse).<sup>31</sup> Additionally, parental monitoring (parents knowing about their adolescents' activities and behaviors) can reduce adolescents' risk for a variety of health problems, including pregnancy, tobacco and other substance abuse, and skipping school.<sup>32-34</sup> Enhancing public health's efforts to educate parents and coupling such efforts with other proven family interventions and school- and community-based resources, may represent fertile grounds for creating a more networked system of resources that support youths and their families. Working to engage parents may provide a concrete starting place for schools and public health authorities to work together to simultaneously improve academic achievement and health outcomes.

To develop a networked system of resources, public health practitioners and researchers can also build on promising school-based interventions to improve school attendance. For example, school-based interventions to monitor and reduce absenteeism, identify children with academic needs, and involve parents in monitoring students' grades and attendance have been shown to be promising strategies for decreasing truancy<sup>35,36</sup>; however, such interventions are underused. Such academic monitoring systems could be expanded or linked with other data sources to reflect a wider range of factors that affect child well-being (e.g., mental and emotional health, family and neighborhood characteristics, health care

utilization). Enhancing the robustness of existing monitoring programs and data systems can help inform the development and evaluation of child-centered and place-based interventions.<sup>37</sup>

To date, much of the work from the public health evidence base has focused on the impact of educational attainment on health outcomes. Previous studies have shown school truancy to be associated with a variety of negative health outcomes, including substance use, delinquency and crime, and other health risk behaviors.<sup>1,2</sup> In addition, school truancy is one of the best predictors of school dropout. Compared with those who graduate, school dropouts lead shorter and less healthy lives, have more involvement in violence and crime, and experience higher rates of incarceration, adolescent pregnancy, and substance abuse.<sup>38,39</sup> The National Prevention Council—a collaboration of 20 federal departments brought together under the Affordable Care Act of 2010—recommends improving education and employment opportunities as a key strategy for improving national health.<sup>40</sup> Likewise, increasing on-time high school graduation rates has been identified as a leading health indicator of Healthy People 2020<sup>41</sup>; however, concrete mechanisms to achieving this goal remain illdefined.

This study is unique in that it examines the relationship between education and health in a different light, suggesting a potential mechanism through which health factors, depression, and substance abuse in particular can predict an important educational outcome. Although mental health and school truancy likely act as reciprocal risk factors,<sup>42</sup> a recent longitudinal study examining the directionality of the relationship between school absenteeism and mental health problems found more support for the causal impact of psychological disorders on absenteeism (as compared with the impact of absenteeism on psychological disorders), with effects varying by grade level.<sup>43</sup> Regardless of the directionality of these relationships, this study suggests the need to more effectively manage depression and prevent substance abuse in order to improve both health and educational outcomes.

## Limitations

Although this study is one of the first to examine diverse characteristics associated with school truancy in a largely low-income, Hispanic population, the design and analysis have several limitations. First, there may have been unmeasured variables (e.g., student levels of stress) that were associated with both truancy and the predictors but were not included in the ordinal logistic regression model. Even though efforts were made to control for all relevant variables, complete measures for several factors, which could influence truancy, were not readily available to our research team. Second, we relied on self-reported measures of truancy and risk behaviors. Previous studies suggest that students' self-reported measures of truancy closely approximate truancy rates in school records.<sup>44</sup> Although audio CASI was used to help increase accurate reporting of some sensitive behaviors,<sup>16,17</sup> adolescents may still be likely to underreport less socially desirable behaviors, such as truancy.

Finally, findings from this study may not be generalizable to the full student population of Los Angeles County or to populations in other US jurisdictions. The sample, drawn from students who applied to charter schools, likely differs from the general population of students in Los Angeles County (e.g., students in the sample may be more motivated to

attend college, parents or case managers may have greater involvement in their educational decisions). Despite these potential differences, truancy rates identified in the study were much higher than national estimates.<sup>3</sup> Given the potential selection biases of this study sample, the prevalence of truancy could be even higher for the general population of county students, affirming the need to further study this vulnerable population. In addition, the demographics of Los Angeles County are somewhat unique and highly diverse, suggesting that the results may not be generalizable to other US jurisdictions.

## Conclusions

The present study contributes to critical gaps in public health research and practice related to educational attainment and health. Because of its multidisciplinary nature, public health may be well positioned to address school truancy in an evidential, comprehensive way, especially in areas of mental health, substance use, and parental engagement. Through partnerships with schools, community-based organizations, law enforcement, and the courts, public health can provide valuable insights into this social problem by integrating health elements into the proposed solutions for combating this phenomenon in affected communities.

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**TABLE 1**

Characteristics of Student Participants From the Reducing health Inequities through Social and Educational change (RISE) Analysis Sample: Los Angeles County, CA, 2013

	<u>% or Mean (SE)</u>
<b>Outcome</b>	
Times truant in the last 30 d	
Never	73.4
Sometimes	17.2
Chronic	9.5
<b>Perceived environment</b>	
Neighborhood quality (scale = 5-20)	13.4 (0.08)
Personal attention from teachers (scale = 5-20)	16.8 (0.08)
Teachers, classes, and other students focus on preparing students for college (scale = 5-20)	16.5 (0.08)
Do not feel safe at school	9.1
<b>Social influences</b>	
Parenting style	
Neglectful	44.0
Indulgent	16.2
Authoritative	23.2
Authoritarian	26.6
Have at least some close friends who dropped out of school	41.0
<b>Individual influences</b>	
Level of student engagement (scale = 16-64)	51.8 (0.20)
Depression	
None	71.3
Mild	20.9
Severe	7.8
Grade point average	
Do not know	4.4
< 2.0	7.0
2.0-3.0	43.9
> 3.0	44.8
Smoked marijuana in the past 30 d	20.4
Drank alcohol in the past 30 d	33.2
<b>Demographics</b>	
Age, y	16.4 (0.04)
Male	44.9
At least 1 parent is a high school graduate	51.2
Race/ethnicity	
Hispanic	84.3
Black	12.3
Other	3.4

*Note.* Descriptive statistics are reported for the sample of RISE participants who reported being currently enrolled in school and had no missing data for the outcome of interest (times truant in the last 30 d). The sample size was  $n = 909$ .

TABLE 2

Characteristics of Nontruant, Sometimes Truant, and Chronically Truant Youths in the Reducing health Inequities through Social and Educational change (RISE) Analysis Sample: Los Angeles County, CA, 2013

Variable	Not Truant in Past Month, Row % or Mean (SE)	Truant 1-2 Times in Past Month, Row % or Mean (SE)	Truant 3 Times in Past Month, Row % or Mean (SE)
<b>Perceived environment</b>			
Neighborhood quality (scale = 5-20)	13.5 (0.10)	13.4 (0.20)	12.7 (0.27)
Personal attention from teachers (scale = 5-20)	17.0 (0.09)	16.2 (0.18)	15.9 (0.28)
Teachers, classes, and other students focus on preparing students for college (scale = 5-20)	16.8 (0.09)	15.7 (0.21)	15.4 (0.26)
Feel safe at school			
Yes	74.8	16.3	8.8
No	59.0	25.3	15.7
<b>Social influences</b>			
Parenting style			
Neglectful	60.8	23.3	15.9
Indulgent	70.0	20.1	8.8
Authoritative	78.7	14.2	7.1
Authoritarian	86.8	9.5	3.7
At least some close friends have dropped out of school			
Yes	64.6	23.1	12.3
No	79.5	13.0	7.5
<b>Individual influences</b>			
Level of student engagement (scale = 16-64)	52.5 (0.22)	50.0 (0.47)	48.8 (0.67)
Presence of depression			
None	77.8	14.8	7.4
Mild	64.7	21.6	13.7
Severe	56.3	26.8	16.9
Grade point average			
Do not know	54.9	15.2	29.9
< 2.0	41.1	33.6	25.3
2.0-3.0	72.8	18.5	8.8
> 3.0	80.8	13.5	5.7
Drank alcohol in the past 30 d			
Yes	51.9	26.7	21.3
No	84.0	12.4	3.6
Smoked marijuana in the past 30 d			
Yes	47.6	29.5	22.9
No	80.0	14.0	6.0

Note. The sample size was n = 909.

TABLE 3

Ordinal Logistic Regression Model of Predictors of School Truancy: Reducing health Inequities through Social and Educational change (RISE) Analysis Sample, Los Angeles County, CA, 2013

	Control Model, OR (95% CI)	Reduced Model, <sup>a</sup> OR (95% CI)	Full Model, <sup>b</sup> OR (95% CI)
<b>Demographic variables</b>			
Age	1.23* (1.02, 1.48)	1.15 (0.92, 1.42)	1.09 (0.88, 1.35)
Male	1.04 (0.76, 1.42)	1.02 (0.72, 1.45)	0.96 (0.69, 1.33)
Race/ethnicity (Ref: Hispanic)			
Black	0.72 (0.39, 1.32)	0.75 (0.34, 1.67)	0.86 (0.34, 2.16)
Other	0.90 (0.40, 2.02)	0.87 (0.36, 2.08)	1.30 (0.49, 3.46)
At least 1 parent graduated high school	0.98 (0.74, 1.32)	1.02 (0.76, 1.37)	1.05 (0.74, 1.48)
<b>Perceived environment</b>			
Neighborhood quality		1.02 (0.97, 1.07)	1.03 (0.97, 1.08)
Personal attention from teachers		0.99 (0.88, 1.10)	0.96 (0.84, 1.08)
Teachers, classes, and other students focus on preparing students for college		0.87** (0.81, 0.94)	0.87** (0.81, 0.95)
Feel safe at school		0.87 (0.63, 1.21)	0.88 (0.62, 1.23)
<b>Social influences</b>			
At least some close friends who dropped out of school		1.48* (1.08, 2.02)	1.17 (0.86, 1.59)
Parenting style (Ref: authoritative)			
Neglectful		2.63** (1.49, 4.65)	2.21* (1.21, 4.03)
Indulgent		2.07** (1.26, 3.39)	1.71* (1.04, 2.82)
Authoritarian		1.30 (0.75, 2.26)	1.32 (0.72, 2.41)
<b>Individual influences</b>			
Student engagement		0.97 (0.94, 1.00)	1.00 (0.97, 1.04)
Depression (Ref: no depression)			
Mild depression		1.64** (1.28, 2.10)	1.57** (1.22, 2.01)
Severe depression		2.10** (1.19, 3.68)	1.80* (1.04, 3.13)
<b>Causes and outcomes of truancy</b>			
Grade point average (Ref: > 3.0)			
Do not know			4.57** (2.20, 9.47)
< 2.0			2.56** (1.49, 4.38)
2.0-3.0			1.12 (0.75, 1.67)
Alcohol use			3.47** (2.34, 5.14)
Marijuana use			1.59* (1.06, 2.38)

Note. CI = confidence interval; OR = odds ratio.

<sup>a</sup>Model contains only exogenous variables (i.e., without grade point average or alcohol and marijuana use).

<sup>b</sup>Model contains all variables.

\*  
 $P < .05$

\*\*  
 $P < .01.$