

DEVIANCE AND THE CONCEPTUAL MODEL VARIABLES AND THEIR EFFECT
ON TEST SCORES

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The following faculty members have examined the final copy of this thesis for form and content, and recommended that it be accepted as partial fulfillment of the requirement for the degree of Master of Sociology

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ABSTRACT

This study attempts to identify the variables that affect test scores in high school students. Using the Educational Longitudinal Survey, 2002, variables included in the Conceptual Model (Student Role Performance, School, Family and Peers) are examined to see the overall and individual affects on students' test scores. Univariate and bivariate analysis was performed as well as an ordinary least squares regression analysis for the independent variables on test scores. Deviance was found to lower test scores in students but socio-economic status of the students' family was found to have the largest impact on test scores. The student role performance model component was found to impact test scores the greatest out of the four model components.

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1. Introduction

An essential component to success and well being in today's society is education (Wright 2007). It is increasingly crucial to go beyond high school into college, and for some, even a graduate program. The ability to gain entry into a skilled job depends on education and experience. Getting a skilled job is important for socio-economic mobility and attaining a better life. Deviance is one behavioral attribute that has been shown to be a negative influence on education. Behaving in socially appropriate ways such as working well with others, sharing, and showing good communication skills are all characteristics that are applauded and rewarded in the education system. Acting inappropriately, or deviant, is often a predictor of lower academic achievement (Crosnoe, Erikson, Dornbusch 2002).

There are numerous schools of thought on the subject of academic performance. The conceptual model used in this study includes the components of student role performance, school, family, and peers. Within the student role performance component are variables such as sex, race, whether the student has been held back a grade, and whether the student has a job or not. Teachers have lower expectations of black, male students than they do of white, female students for example. The school component includes variables such as whether the student has been in a college prep program, free lunch program, and the level of security at the school. The free lunch program (which reflects socioeconomic status of the family) often increases test scores for those who get this service. The family component includes variables measuring socio-economic status, number of siblings, and family rules. The higher the socioeconomic status of the family, the more resources they have, giving the student in the family a higher chance of doing

well academically. The peers component includes the variables for the number of peers who dropped out and importance of grades to friends. The students' peers can have a positive or negative effect on the student. If the peers view their grades as of low importance, it is likely that the student will view their own grades in the same manner.

This study looks at the different variables in the Educational Longitudinal Survey, 2002 using a conceptual model that has potential to impact academic performance. Some of the variables, such as increased parent rules, should positively impact academic performance. Variables such as school hindrances and peers who drop out should have a negative impact on academic performance.

2. Literature Review

2.1 Student Role Performance

Student role performance is the behavioral expectations established by institutional agents such as teachers and administrators to assess students' behavior (Wright 2007). Student role performance is affected by gender. Young boys and girls tend to have the same views when it comes to understanding what it takes to make good grades and succeed in class (Stetsenko et al 2000). Girls tend to discount their own talents, however, even though they tend to outscore boys (Stetsenko et al 2000). Comparing males and females in high school, females tend to have higher goals for themselves (Saunders et al 2004). In the United Kingdom in 1992, results of the General Certificate of Secondary Education (GCSE) examinations were published showing an obvious gender gap in the exam performance, with females outscoring the males which was more noticeable for sixteen through eighteen year olds (Arnot et al 1999).

The variable race is included in Student Role Performance and tends to have an effect on the student's test scores. Teachers in urban schools are more likely to have lower expectations of their African-American students than other students which then cause them to believe their inferiority and perform at a lower level (Ferguson 1998). The difference in academic performance between races can be explained somewhat by student characteristics such as poverty and school attended. Racial gaps still remain within schools as well. The race gaps also appear to be correlated with large school size meaning, the smaller the school, the less negative affects (Stiefel et al 2007). Students may often react to school negatively in response to how they are treated (often less valued for minorities) in society (Weis 1988).

Homework has a positive effect on test scores. The more time spent doing homework, the higher test scores will be (Keith 1982). An increase in time spent on homework may also increase confidence in school (Keith 1982). Stronger evidence of the influence of homework on test scores is found in grades seven through twelve than kindergarten through sixth grade however (Cooper et al 2006).

Literature suggests extracurricular activities influence academic performance as well. Participation in high school sports has a positive impact on grades, homework, coursework selection, adulthood aspirations and self-esteem (Marsh and Kleitman 2003). These findings hold true across different genders, ethnic groups, ability levels and educational aspirations. Sports increase commitment to school and school values as well (Marsh and Kleitman, 2003). Extracurricular participation is shown to be associated with leadership, academic excellence, and popularity. This participation provides the opportunity to make positive connections to the educational institution (Mahoney and

Cairns 1997). It can also provide a gateway into social networks, while at the same time promoting personal goals, interests, and achievements.

Having disabilities often has an effect on academic performance as well. Studies have shown that people tend to treat those with disabilities as a sick person or a form of deviant (Haber and Smith 1971). Students who have disabilities are shown to perform lower academically. Students with learning disabilities may experience a wide range of problems with learning or performing academic skills in classroom environments. These difficulties may be caused by attention deficits and inadequate self-management skills (Shimabukuro et al 1999).

2.2 Schools

Schools are the institutional environment in which student role performance is performed (Wright 2007). Class size in the school has a negative impact on the learning ability of the child which causes lower test scores (Crosnoe et al 2004). Smaller class sizes and even school sizes may have a positive effect on a student's grades. Smaller class sizes are correlated with higher academic performance not only in the United States but in other countries as well. Crosnoe et al (2004) found that increasing school size decreased student attachment to school and to teachers as well as decreasing extracurricular participation. Class size is also associated with levels of comfort, activity, learning experience, and the degree of class interactions and experience. Class size, however, is not associated with the level of understanding the materials given in class (Berger 2003).

Project STAR (Student-Teacher Achievement Ratio) conducted in 1985 was a four year long research project geared toward seeing if students in smaller classes (size 13-

17) have better academic achievement than those in larger classes (sizes 22-25). STAR tested kindergarten through third grade classes and found that there was indeed improvement in the smaller classrooms with twice the improvement for the minority children in these classes (Mosteller 1995). In these smaller class sizes, teachers are given the opportunity to meet the specific needs of each individual child (Glass 1982). Smaller class sizes allow the teachers to spend more quality one-on-one time with each student, which leads to increased student attention (Glass 1982).

Student lunch programs increase test scores in children (Dunifon and Kowlaski-Jones 2003). Improved nutrition leads to improved ability to learn and regulate behavior. Poor families are more likely to have to deal with inadequate nutrition and food shortage, which puts them at risk for problems related to health as well as education (Dunifon and Kowalski-Jones 2003). Children who receive healthy lunches at early ages receive greater benefits such as academic achievement later on in life. Students receiving a healthy lunch also increase overall fitness and have less sick days from school. Along with the lunch programs, school breakfast programs also show an increase in academic ability. Math scores seem to be the most increased by this particular program (Murphy et al 1998).

Poor school facilities tend to cause students to perform lower academically (Schneider 2002). Over 40% of schools report unsatisfactory environmental conditions. Noise, too hot/cold facilities, bright lights, and poor air quality are all factors of lower academic achievement. Indoor air quality is correlated with increased student absenteeism, mainly linked to airborne bacteria and mold which irritates students with asthma (Schneider 2002).

Deviance in schools is also a problem which affects test scores. Bullying is a form of deviance in schools in which one student picks on another causing possible psychological and physical harm to that student (Kumpulainen and Rasanen 1999). This creates negative relationships in the schools hindering academic performance. Deviance (frequency, prevalence, and intensity) can be lessened however with increased overall attachment to school (Dornbusch et al 2001).

2.3 Families

Family is the primary socialization unit (Wright 2007). The family unit has a definite impact on the child and his or her academic performance. Some of the different ways family impacts children in their education are family size, structure, socioeconomic status (SES), parental occupation and parental education (Astone and McLanahan 1991).

Family structure can be broken down into several parts. For instance, the number of family members, especially the number of siblings, a child has affects the child in areas such as education and academic performance (Downey 1995). There is an inverse relationship between the more siblings a child has and the child's academic performance. The relationship involves the amount of time available to spend with the child considering that there are a number of siblings to look after. The child may feel left out or even unwanted at times because there is less time for the parent to spend with each child, the more siblings there are (Downey 1995).

Structure in a family can also include the types of parenting styles used in the household. Authoritative parenting styles facilitate success in children (Steinberg et al 1989). Parents who utilize this style tend to see higher achievement in their children than parents utilizing other parenting styles (Steinberg et al 1989). It seems that the

authoritative type of parenting style helps children reach their maximum potential.

Allowing children autonomy in decision making too early is highly correlated with lower grades and less effort put forth in class. Joint decision making leads to higher grades and more effort put forth in class (Dornbusch et al 1990). Other forms of structure in a family that affect a child's academic performance are single-parent household structures as well as step family structures. Children who grow up in single-parent households are less likely to complete high school and less likely to continue their education if they do finish high school than children in dual parent household, which may revolve around time spent with the child (Astone and McLanahan 1991). If there is only one parent to provide for the family, that parent is going to be spending more time at work and less time interacting with the child. In contrast, a two-parent family structure would provide at least one parent to support the child nearly all of the time.

Interactions between parents and children can have an impact on academic performance as well (Dornbusch et al 1987). Verbal interactions between mother and child in particular, positive relationships between parents and children, parental beliefs and attributions about the child discipline and control strategies all link family and school achievement. Higher communication means more parent involvement in the child's academic performance resulting in higher academic achievement (Dornbusch et al 1987).

Parents differ in the ways and strategies they use to guide their children through school. These different strategies show how family background and involvement play a role in student achievement. Mothers who have a college education are more likely to be very involved in their children's education than mothers without a college education. They have more contact with the teachers than mothers without a college education and

are more likely to take action to help their child's academic performance (Baker and Stevenson 1986). Also, maternal employment seems to be a positive factor in children's academic performance, especially children with lower SES (Pareja 2006). Children who come from poorer families score lower on standardized tests, typically all the way through high school (Mayer 1997). Parental income definitely impacts a child's life chances especially in the area of education (Mayer 1997).

2.4 Peers

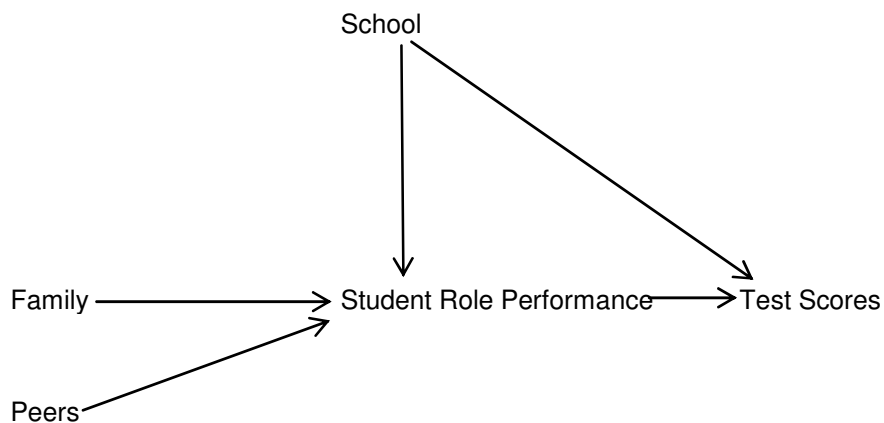
Peers are a reference group for behavior norms that can establish student role performance. As children enter adolescence, they tend to separate into different peer group types (Sussman et al 2007). These children identify with peers who are similar to them which aids in forming a positive self-concept as well as giving the children a separate identity from their parents.

Adolescent social groups are a way for adolescents to break free from the immediate family and enter their own social world where they can make their own decisions about their life (Sussman et al 2007). Because of the new found autonomy and separation from the parents, these peer groups have a profound effect on the actions of the adolescent (Kindermann 2007). Peers tend to induce, sustain, and permit deviant actions (Dentler and Erikson 1959). Positive, supportive relationships with peers can be critical to good choices being made in different aspects of the adolescent's life. Engagement in school is one of these aspects on which adolescent peer groups can have either a positive or a negative effect (Kindermann 2007). Being involved with peers that make bad choices can have a negative impact on behavior in school, motivation in school and academic success. Students that drop out affect their peers in a negative way

(Rumberger 1995). Having peers drop out decreases academic performance in students by discouraging them to do well (Rumberger 1995). Peers can also support the adolescent in school leading to higher academic achievement (Kindermann 2007). There is a direct impact on peer academic performance and mutual assistance within the positive peer group (Wentzel and Caldwell 1997).

In some cases, less peer involvement can have a negative effect on academic achievement as well. Not being accepted can cause adolescents to not do as well as those who are accepted (Wentzel and Caldwell 1997). Children who enter a grade with friends that were made previously, make better adjustments in school than those who have to start fresh (Wentzel and Caldwell 1997). Better adjustments early on in the school year can have a positive effect on academic achievement.

2.5 Conceptual Model



(Derived from Wright, 2007)

Student role performance comprises the activities that students engage in on a daily basis that affects their lives as a student in a school setting. The student role

performance component includes factors such as sex, race, deviance, extracurricular activities and homework. As positive student role performance increases (i.e. they do more homework or engage in extracurricular activities, etc.) test scores will also increase. School is the institutional setting in which students learn and engage in student role performance. The school component includes variables such as class size and student-to-teacher ratio which are both directly linked to test scores. As class size and student-to-teacher ratio decreases, test scores increase. Also included in the school factor are college prep programs, which are directly linked to student role performance. College prep programs will only affect the students who take them, but for those who do elect to do so will see an increase in academic performance. Family is the primary socialization unit. Family includes variables such as size, structure, SES, parent education and occupation. The family factor is directly linked to the student role performance. Higher SES and parent education increase test scores in the children of those families. Peers are the reference group for students and is directly related to student role performance. The peer component includes the variables for the number of peers who drop out and the peers' feeling of importance of grades.

3. Methods

3.1 Hypotheses

This study looks at the role of deviance on test scores in high school-aged young adults. The variable deviance is a composite comprised of how many times the student was late to school, cut or skipped class, got in trouble in school, and school contact with the parent about poor performance. The model segments used to examine whether a

relationship between deviance and test scores exist includes the following: student-role performance, family, peers and school.

Student-role performance hypotheses:

1. Being deviant will lower test scores, net of other factors.
2. Being a member of a minority group will lower test scores, net of other factors.
3. Having a disability will lower test scores, net of other factors.
4. As the number of times the school contacts the parent increases, test scores will decrease, net of other factors.

School hypotheses:

5. Students in schools who offer college prep courses will increase student role performance and test scores, net of other factors.
6. The greater the problems with the condition of the facilities of the school, the lower the test scores in that school, net of other factors.

Family hypotheses:

7. As parents communication increases, test scores also increase, net of other factors.
8. As SES increases in the family, test scores will also increase, net of other factors.

Peers hypothesis:

9. The higher the number of friends of the student who drop out, the lower the test scores will be, net of other factors.

3.2 Data and Sampling

The Education Longitudinal Study of 2002 (ELS) is sponsored by the National Center of Education Statistics (NCES) of the Institute of Education Sciences, U.S.

Department of Education. The purpose of this survey is to study educational, vocational,

and personal development of students at various stages in their educational careers and the personal, familial, social, institutional, and cultural factors that may affect that development.

The ELS shows the transition of a national sample of young adults as they continue from 10th grade on through high school. This is a longitudinal study where the same units are surveyed over a period of time. The respondents surveyed were students as well as their parents, teachers and schools. The sample size was approximately 750 schools and over 17,000 students. Schools are the first-stage unit of selection and sophomores were randomly selected within the schools. Asian Americans and Hispanic students were oversampled as well as private schools. Students for the full-scale ELS consisted of spring-term 10th graders in 2002 enrolled in schools in the target population. Several sample restrictions were placed on the ELS later. Only complete student, parent, and administrator questionnaires were selected and only math and reading test scores were used. The final sample size is 11,522.

The weight provided by the ELS was formulated to compensate for unequal probabilities of the selection of schools and students in the base year sample. Using this weight will artificially inflate the sample size in some statistical packages causing an increased probability of a Type I error. In order to correct this error, a relative weight is created by dividing the weight by the mean of the weight. The relative weight maintains the sample size and reproduces the distribution of the weighted population.

3.3 Variables

The dependent variable is an NCES supplied variable for test scores for the 10th grade students administered in mathematics and reading. The distribution is near

normal with a minimum of 20.91 and a maximum of 81.04. The standardized test scores were made into quintiles as well as centiles.

Student role performance include the variables sex, race, English as a first language for student, whether the 10th grader had been held back, if they were ever in a remedial class, if they have a disability, if they come to class prepared, how many hours they work on their homework, how many positive qualities they show in math class, school contact with parent about behavior, hours a week spent on extracurricular activities, ever in college prep program, and if they worked.

The variable for deviance was made into a scale (cronbach alpha of .78) by summing the variables: 'times late for school', 'times skipped class', 'times absent from school', 'times got in trouble at school', 'times put on in school and out of school suspension', 'times on probation', and 'times transferred for disciplinary reasons'. The deviance variable was then made into a binary variable with 1 equaling 'deviant' and 0 equaling 'non-deviant'. The sex variable was made into a binary with 'male' equal to 0 and 'female' equal to 1. The minority variable was made into a binary by recoding 'white non-Hispanic' into 0 and adding the rest together into an 'other' category equaling 1. The English as a first language variable was made into a binary with 0 equal to 'English not as a first language' and 1 equal to 'English as the first language'. The variable for whether the student has been held back grade is a binary with 0 equal to 'never being held back' and 1 equal to 'been held back before'.

The remedial classes binary was made by taking the variables 'have taken remedial English' and 'have taken remedial math' and making them binaries where 0 is 'never been in a remedial class' and 1 is 'been in a remedial class'. The disability

variable was made into an index with eight binary variables for whether they have had: 'learning disabilities', 'speech/language impairments', 'mental retardation', 'emotional disturbance', 'hearing impairments', 'visual impairments' and 'other disabilities'. The summed index was then recoded where 1 equals 'at least one disability' and 0 equals 'no disability'. The variable for not being prepared in class was made by recoding 'how often in class without pencil/paper', 'how often in class without books', and 'how often in class without homework done' into 0, 1 binaries where 0 is 'prepared' and 1 (1,2, and 3 equal 1) is 'not prepared'. The binaries were then summed and recoded into a binary for all three where 0 is 'prepared' and 1, 2, and 3 is 'not prepared' equaling 1.

The missing values for the variable homework that included the variables: 'hours/week spent on homework in school' and 'hours/week spent on homework out of school' were assigned the means on a linear trend. An index was then created to show the amount of homework done over the entire week. The variable math index was created assigning the missing by the means to the variables: 'how often reviews work in math class', 'how often listens to math teacher lecture', 'how often copies math teacher's lecture notes from board', 'how often uses books besides math textbooks', 'how often does problem-solving in math class', 'how often uses calculators in math class', 'how often uses graphing calculators in math class', 'how often uses computers in math class', 'how often explains work in math class orally', and 'how often participates in student math discussions'. The variables were then summed to create an index and rounded in order to recreate the original scale. The new index was then recoded into a binary with 'comes to math class unprepared' equal to 0 and 'comes to class prepared' equal to 1.

The school contact variable was created by taking the variables ‘school contacted parents about poor performance’, ‘school contacted parent about poor attendance’ and ‘school contacted parent about problem behavior’ and assigning the means to missing. These variables were each then made into a binary with 0 equal to ‘no contact’ and 1 equal to ‘contacted parent’. A scale was then created by summing the three variables and recoding into a binary in which 0 equals ‘no contact’ and 1 equals ‘contacted parent’. The variable ‘extra-curricular activities’ was created by assigning the missing by the means to the variable ‘hours/week spent on extracurricular activities’. For the variable ‘ever in a college prep program’ the means were assigned to the missing. The variable working was created by assigning the missing by the means on the variables ‘how many hours usually works a week’ and ‘how many hours works on the weekend’. The two variables were then summed and made into an index. The index was then recoded into a binary with 0 equal to ‘student does not work’ and 1 equal to ‘student works’.

The family factor includes the variables family composition, family communication, number of siblings the 10th grader has, geographic region of the school, socio-economic status composite, parent participation, how often parent helps with homework, and parent rules. The variable for family composition was made into a binary with ‘dual parent families’ coded into 0 and ‘single parent families’ coded into 1. The variable for family communication was created by assigning the missing by the means for the variables ‘how often discussed school courses with parents’, ‘how often discussed school activities with parents’, ‘how often discuss things studied in class with parents’, ‘how often discussed grades with parents’, ‘how often discussed transferring with

parents’, ‘how often discussed prep for ACT/SAT with parents’, ‘how often discussed going to college with parents’, ‘how often discussed current events with parents’, and ‘how often discussed troubling things with parents’. A scale was then created (cronbach alpha of .993) by summing the variables. The variable ‘number of siblings the student has’ was recoded to assign missing by the means.

The variable for geographic region of the school was made into a binary using the oneway analysis of variance with the scheffe option to assign ‘northeast’ and ‘midwest’ to the 0 category and ‘south’ and ‘west’ to the 1 category. The oneway analysis of variance uses test scores to group together each of the regions that are alike. The variable ‘socio-economic status composite’ had no missing values and was left alone. The variable for participation of parent was created by assigning the missing of the variable to respondents with missing scores by the means on the variables ‘attended school activities with 10th grader’, ‘worked on homework/school projects with 10th grader’, ‘attended concerts/plays/movies with 10th grader’, ‘attended sports events outside school with 10th grader’, ‘attended religious services with 10th grader’, ‘attended family social functions with 10th grader’, ‘took day trips/vacations with 10th grader’, ‘worked on hobby/played sports with 10th grader’, ‘went shopping with 10th grader’, ‘went to restaurants with 10th grader’, ‘spent time talking with 10th grader’, and ‘did something else fun with 10th grader’. The variables were then summed to create an index.

The school level factors include the variables percent of 10th graders in a college prep program, percent of 10th graders in free lunch program, number of learning hindrances, disruption in the school, school administrators’ views of school, and school security. The college prep program variable was recoded into a binary where 0 equals

‘never in college prep program’ and 1 equals ‘been in college prep program’. The percent of 10th graders in free lunch program variable was assigned midpoints for each percentage group (0-5%=3, 6-10%=8, 11-20%=16, 21-30%=26, 31-50%=40, 51-75%=63, and 76-100%=88). The learning hindrance variable was made into a scale (cronbach alpha was a .993) by adding each of the variables, which were Likert scales, together. The variables included ‘poor conditions of the buildings’, ‘poor heating/air/light’, ‘poor science labs’, ‘poor fine arts facilities’, ‘lack of space’, ‘poor library’, ‘lack of text/supplies’, ‘too few computers’, ‘lack of multi-media’, ‘lack of discipline/safety’, and ‘poor voc/tech equip/facilities’. The learning disruptions variable was made by summing up the three variables ‘other students often disrupt class’, ‘does not feel safe at this school’, and ‘disruptions get in the way of learning’ and creating an index. The administrator’s views variable was made into a scale (cronbach alpha of .997) by summing the variables. The variables included in this scale are ‘how often: tardiness problems at school’, ‘absenteeism a problem at school’, ‘cutting class a problem at school’, ‘physical conflicts a problem at school’, ‘robbery/theft a problem at school’, ‘vandalism a problem at school’, ‘use of alcohol at the school’, ‘use of illegal drugs a problem at school’, ‘use of illegal drugs a problem at school’, ‘students on drugs/alcohol at school a problem’, ‘sale of drugs near school a problem’, ‘possession of weapons a problem at school’, ‘physical abuse of teachers a problem at school’, ‘verbal abuse of teachers a problem at school’, ‘racial tension among students a problem at school’, ‘student bullying a problem at school’, ‘disorder in classrooms a problem at school’, ‘student disrespect for teachers a problem at school’, ‘gang activity a problem at school’, and ‘how often cult/extremist group activities a problem at school’.

The school security variable was made into a scale (cronbach alpha of .994) by summing the variables. The variables that are included in this scale are: 'control access to buildings during school hours', 'control access to grounds during school hours', 'require students pass through metal detector', 'random metal detector checks on students', 'close campus for students during lunch', 'random dog sniffs to check for drugs', 'random sweeps for contraband', 'require drug testing for any students', 'require students to wear uniform', 'enforce strict dress code', 'require clear book bags/ban book bags', 'require students to wear badges/picture ID', 'require faculty/staff to wear badges/picture ID', 'use security cameras to monitor school', 'use of paid security during school hours', 'use paid security as students arrive and leave', 'use paid security at school activities', 'use paid security outside of school hours/activities', and 'use paid security at other times'.

The peers section includes the variables percent of 10th graders with siblings who dropped out of high school, the importance of grades to friends, and number of peers who dropped out. The variable for the percent of 10th graders with siblings who dropped out of high school was assigned missing by the means. The variable for the importance of grades to friends was made by taking the variables 'importance of grades to first friend', 'importance of grades to second friend', and 'importance of grades to third friend' and summing them to create a binary where 0 equals 'not important' and 1 equals 'important'. The variable for number of peers who drop out was made into a binary where 'none of them' equals 0 and 'some of them', 'most of them', and 'all of them' equals 1.

4. Results

Table 1A (continued on Table 1B) presents the univariate and bivariate analysis of the mean of students who are deviant (47.8%) and not deviant (52.2%) in each model segment (student role performance, family, peers, and school). Deviant students are more likely to be male (49.2% vs. 52.6%), members of a minority group (40.6% vs. 30.9%), been held back a grade (0.16 vs. 0.10), and had a remedial course (0.12 vs. 0.09).

Deviant students also are more likely to have a disability (14.4% vs. 9.7%), come to class unprepared (42.1% vs. 22.3%), spend fewer hours on homework (9.72 vs. 11.47), be less prepared in math class (85% vs. 90.7%), and have had the school contact their parents (0.52 vs. 0.24). Deviant students are less likely to participate in extracurricular activities (56.5% vs. 72.8%), less likely to participate in college prep classes, and more likely to work (67.3% vs. 60.2%).

Deviant students are more likely to be in a single parent household (28.4% vs. 19.4%), to have more siblings (2.39 vs. 2.21), be in a northeast or midwest geographic region of school (0.60 vs. 0.54), and have more siblings who dropped out of high school (17% vs. 10%). Deviant students have less family communication (1.95 vs. 2.06), lower SES (-0.03 vs. 0.11), lower frequency of parent participation (3.05 vs. 3.57), less help from parents with homework (3.55 vs. 3.57), and less family rules (2.65 vs. 2.72).

Deviant students tend to have friends who feel that grades are not important (2.07 vs. 2.13) and have more peers drop out of school (0.51 vs. 0.48). Deviant students are less likely to go to a school that offers college prep programs (59.87 vs. 62.47) and have an administrator who has a poor view of the school. Deviant students are more likely to receive free lunch (25.73 vs. 22.69), have learning hindered by school conditions (1.73

vs. 1.69), have learning disruptions (1.38 vs. 1.27) and have higher security at school (0.39 vs. 0.38).

Table 2 presents the OLS regression analysis regressing deviance on test scores. The full model explains 53.2% of the variance of test scores. These findings support the hypothesis that as deviance increases, test scores decrease (-0.46). Supporting hypothesis two, table 3 shows that being a member of a minority group will lower test scores (3.189) holding true for both deviant (-3.038) and not deviant students (-3.285). This table also supports the third hypothesis, having a disability will lower test scores (-6.007). This is true for deviant (-5.811) and not deviant students (-6.173). The fourth hypothesis, as the number of times the school contacted the parents increase, test scores decrease, was supported in this table (-2.145). This is true for deviant (-1.908) and not deviant students (2.487). The OLS regression table supports hypothesis five that states, as parent communication increases, test scores will also increase (1.090) which is shown for both deviant (1.177) and not deviant students (1.006). Hypothesis six is supported by table 3, as SES increases, test scores increase (2.157) holding true for deviant (2.113) and not deviant students (2.148). The OLS regression table also supports the seventh hypothesis, as the number of peers who drop out increases, test scores will decrease (-2.109). There are similar finding for deviant (-2.046) as well as not deviant students (-2.125). Table 3 also supports the eighth hypothesis, as the number of students in a college prep course increases, test scores will also increase (0.009) with similar findings for both deviant (0.009) and not deviant students (0.010). Hypothesis nine was supported by table 3, as the learning hindrances by the condition of the school increases, test scores will decrease

(-0.139). This is also true for both deviant students (-0.110) and not deviant students (0.164).

Graph 1 illustrates test scores for deviant students and non-deviant students by SES quintiles. This shows that both deviant and non-deviant students have an increase in test scores as SES is increased. It also illustrates that although both deviant and non-deviant students have an increase in test scores with greater SES, deviant students still receive lower test scores than non-deviant students regardless of which SES percentile they were in. This graph is of particular importance because, although socioeconomic status in Table 2 has a standardized beta of 0.253 explaining the highest amount of variance in the variable for test scores, deviance still lowers test scores in each quintile.

Figure 2 shows the partitioning of unique variance in the dependent variable of test scores by model segments. The Student Role Performance model segment has the unique variance of 53.7% for the full sample with similar percentages for the non-deviant and deviant samples (52.5% and 55.1%). The School model segment has the unique variance of 6.6% for the full sample with similar percentages for non-deviant and deviant samples (7.6% and 5.6%). The Family model segment has the unique variance of 31.8% for the full sample with similar percentages for deviant and non-deviant samples (30.7% and 32.7%). The Peers model segment has the unique variance of 7.9% for the full sample with similar percentages for deviant and non-deviant samples (9.2% and 6.5%). Figure 2 shows the strength of the student role performance model segment on the variable test scores because it explains over 50% of the unique variance for the full sample followed by the family component which explains nearly one third of the unique

variance for the full sample. Together, the student role performance and family components explain over 85% of the unique variance for the full sample.

5. Discussion

Student role performance, school, family and peer factors can all have an impact on test scores. Hypothesis one, being deviant will lower test scores, has been partially supported by table 1A with a mean deviant student test score of 49.17 and a mean not deviant student test score of 52.76. It is also supported in table 3, which is the OLS regression analysis, in which test scores decrease 0.46 units for those who are deviant. Hypothesis two, being a minority will lower test scores, was supported in table 3, in which being a member of a minority group decrease test scores 3.189 units. Hypothesis three was supported in table 3, in which having a disability lowers test scores by 6.007 units. Hypothesis four was supported in table 3, in which for every time the school contacted the parent the test score decreases by 2.145 units. Hypothesis five was supported in table 3, in which for every unit of family communication, test scores increase by 1.090 units. Hypothesis six was supported by table 3, in which for every SES percentile increase, test scores increase 2.157 units. Hypothesis seven was supported by table 3, in which for every peer who drops out of school, test scores go down 2.109 units. Hypothesis eight was supported by table 3, in which being enrolled in a college prep course increases test scores by 0.009 units. Hypothesis nine was supported by table 3, for every unit increase in student hindrance by the condition of the facilities, test scores decrease by 0.139 units.

Several limitations in this study require attention. The dataset used for this study collected self reports of adolescents (although self reports of the parents, teachers and

schools were also accounted for) the data has to rely on the perception of the 10th grader at that particular moment in time. Also, the NCES dataset will continue following these same 10th graders on through high school and into the job market, but for this study only the accounts of the 10th grader at that time were used. The main problem with self reports is that attitudes change. For example, the administrator may have had a low opinion of the problems in the school at the time it was completed. If followed over a period of time, his or her attitudes towards the school may have changed in a positive or negative way. Had a longitudinal study been available, these changing attitudes and ideas could have been tracked. Using cross-sectional data is also problematic because it is assumed that all variables are affecting the dependent variable with the same intensity. For example, if the child just started getting involved in extracurricular activities, the full impact may not be seen yet compared to a child who has been in extracurricular activities for years. We are also assuming “deviance” when only one deviant act has been documented. The definition of deviance is different for many people. Also, only deviant acts that were accounted for were documented. It would be nearly impossible to note all deviant acts when not all were caught.

In order to get a skilled job and move up economically, it is important to receive a good education. Because deviance is shown in this study to lower test scores in children, it is crucial that programs be implemented to cut down on deviant acts in and out of schools. Mentoring programs could be helpful, especially in single-parent families where the child might not receive the proper attention he or she needs. Targeting “deviant” children at a young age and implementing mentoring programs for them could help identify the problems in need of correcting. Teachers and parents could help identify the

“at risk” children by looking for signs of deviance in the classroom as well as at home. Being verbally defiant both in the classroom and in the home could be seen as an early sign of deviance in these young children. Continually not following directions and lack of respect for adults can be identified early and mentoring programs can be implemented. Also, more thought should be given to higher education during high school as well. If there is awareness and encouragement toward higher education, it is possible that students will strive harder to achieve a degree in college. Giving support to young adults throughout high school toward aiming at a higher education will evoke hope and goals in these young adults. The school counselor could also help by providing options for financial aid to young adults in need.

A program to help clean up school facilities should also be implemented. Given that poor facilities lead to a decrease in attendance (lowering test scores), it is important to address this situation. Funding for schools should be sought out and utilized to provide a healthier environment for learning.

Raising awareness for positive parent communication with their child could also be addressed. Programs could be provided for those families who want to make use of them. Group sessions could be formed to give support for the parents and their role in their child’s academic life.

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APPENDICES

TABLE 1A
Values for Full Sample and by Deviance

Variables:	Full Sample	Not Deviant ¹ ²	Deviant
Dependent Variable:			
Reading/Math Composite Test Score (mean)	51.05	52.76 *** ^	49.17
Reading/Math Composite Test Score (median)	51.38	53.52	49.08
Reading/Math Composite Test Score by centile (stddev)	50.74 (9.47)	55.86 *** ^ (9.38)	45.13 (9.21)
Independent Variables:			
Student Role Performance Factors:			
% Female (0,1) (stddev)	51.0% (0.50)	52.6% *** (0.50)	49.2% (0.50)
% Minority (0,1) (stddev)	35.5% (0.48)	30.9% *** ^ (0.46)	40.6% (0.49)
% English is First Language (0,1) (stddev)	86.9% (0.34)	87.6% * (0.33)	86.3% (0.34)
Times Student Held Back a Grade (stddev)	0.13 (0.33)	0.10 *** (0.29)	0.16 (0.37)
Number of Remedial Classes (stddev)	0.11 (0.31)	0.09 *** (0.29)	0.12 (0.33)
% At Least One Disability (0,1) (stddev)	12.0% (0.32)	9.7% *** (0.30)	14.4% (0.35)
% Student Come To Class Unprepared (0,1) (stddev)	31.4% (0.02)	22.3% *** ^ (0.03)	42.1% (0.02)
Hours Student Spends on Homework per week (stddev)	10.63 (8.81)	11.47 *** ^ (9.03)	9.72 (8.47)
% of Students Prepared in Math Class (stddev)	88.0% (0.33)	90.7% *** (0.29)	85.0% (0.36)
Number of Times School Contacted Parent (stddev)	0.37 (0.48)	0.24 *** ^ (0.42)	0.52 (0.50)
% Extracurricular Participation at School (0,1) (stddev)	65.0% (5.73)	72.8% *** (5.79)	56.5% (5.59)
% Participated in College Prep (0,1) (stddev)	21.4% (0.41)	22.1% * (0.42)	20.5% (0.40)
% Students who work (0,1) (stddev)	63.6% (0.48)	60.2% *** (0.49)	67.3% (0.47)
School:			
Num. Students in school taking College Prep Prog. (stddev)	61.2% (30.55)	62.5% *** (30.43)	59.9% (30.64)
Free lunch Program (lower income) (stddev)	24.14 (22.28)	22.69 *** (21.36)	25.73 (23.13)
Scale for learning hinder. by school con. (1-4) (stddev)	1.71 (0.63)	1.69 *** (0.63)	1.73 (0.62)
Index of learning disruptions (0-3) (stddev)	1.32 (0.85)	1.27 *** (0.86)	1.38 (0.83)
Scale of admin. view of std. problems (1-5) (stddev)	3.60 (0.36)	3.62 *** (0.36)	3.57 (0.36)
Scale of security at school (0,1) (stddev)	0.39 (0.14)	0.38 (0.14)	0.39 (0.14)

Table continued onto next page

Sample n (weighted):	10,939	5,710	5,229
	100%	52.2%	47.8%

¹ ***p < 0.001; **p < 0.01; *p < 0.05

² effect size greater => .20

TABLE 1B
(continued from previous page)

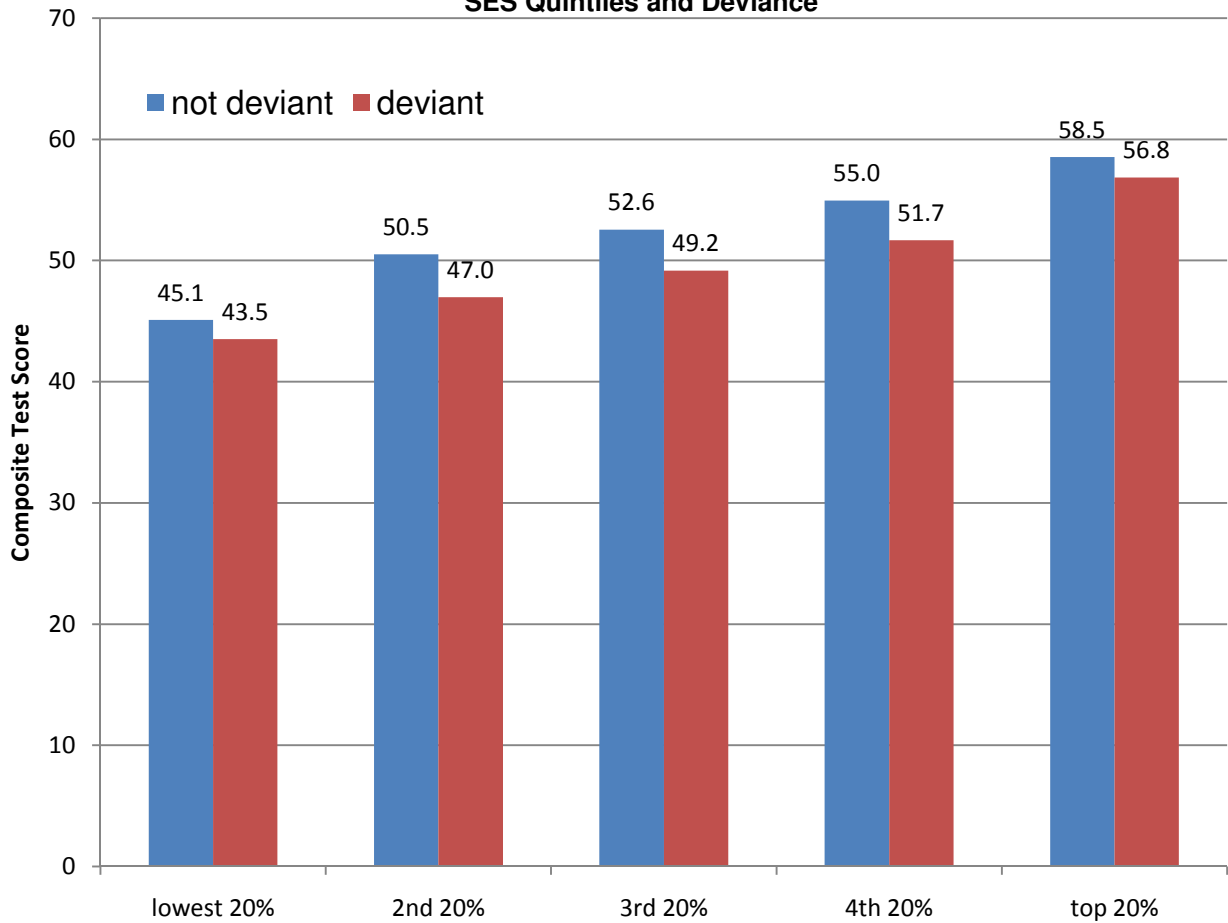
Values for Full Sample and by Deviance

Variables:	Full Sample	Not Deviant ¹	Deviant ²
Dependent Variable:			
Reading/Math Composite Test Score (mean)	51.05	52.76 *** ^	49.17
Reading/Math Composite Test Score (median)	51.38	53.52	49.08
Reading/Math Composite Test Score (centile)	50.74	55.86 *** ^	45.13
(stddev)	(9.47)	(9.38)	(9.21)
Independent Variables:			
Family Factors:			
% In Single Parent Household (0,1)	23.7%	19.4% *** ^	28.4%
(stddev)	(0.42)	(0.40)	(0.45)
Scale of family communications (1-3)	2.01	2.06 *** ^	1.95
(stddev)	(0.50)	(0.50)	(0.49)
Number of Siblings	2.30	2.21 ***	2.39
(stddev)	(1.55)	(1.52)	(1.57)
Geographic region of school- South, West (0,1)	0.57	0.54 ***	0.60
(stddev)	(0.50)	(0.50)	(0.49)
SES Composite Centile (1-100)	50.57	53.23 *** ^	47.66
(stddev)	(28.85)	(29.09)	(28.30)
Frequency of Parent Participation (1-4)	3.10	3.14 ***	3.05
(stddev)	(0.52)	(0.51)	(0.53)
How often helps with homework (1-4)	3.56	3.57 ***	3.55
(stddev)	(0.46)	(0.47)	(0.46)
Family Rules (0-4)	2.69	2.72	2.65
(stddev)	(0.68)	(0.67)	(0.68)
Peers:			
% With Siblings Dropped Out of High School (0,1)	13.0%	10.0% *** ^	17.0%
(stddev)	(0.34)	(0.31)	(0.37)
Importance of grades to friends (1-3)	2.10	2.13 ***	2.07
(stddev)	(0.45)	(0.45)	(0.45)
Number of Peers Dropout	0.43	0.36 *** ^	0.51
(stddev)	(0.50)	(0.48)	(0.50)
Sample n (weighted):	10,939	5,710	5,229
	100%	52.2%	47.8%

¹ ***p < 0.001; **p < 0.01; *p < 0.05

² effect size greater => .20

Graph 2
Composite Math/Reading Mean Test Scores by
SES Quintiles and Deviance



Family Socioeconomic Status Quintiles
 * all means different at the .000 level between non-deviant & deviant groups within each quintile Socio-economic Status Quintile.

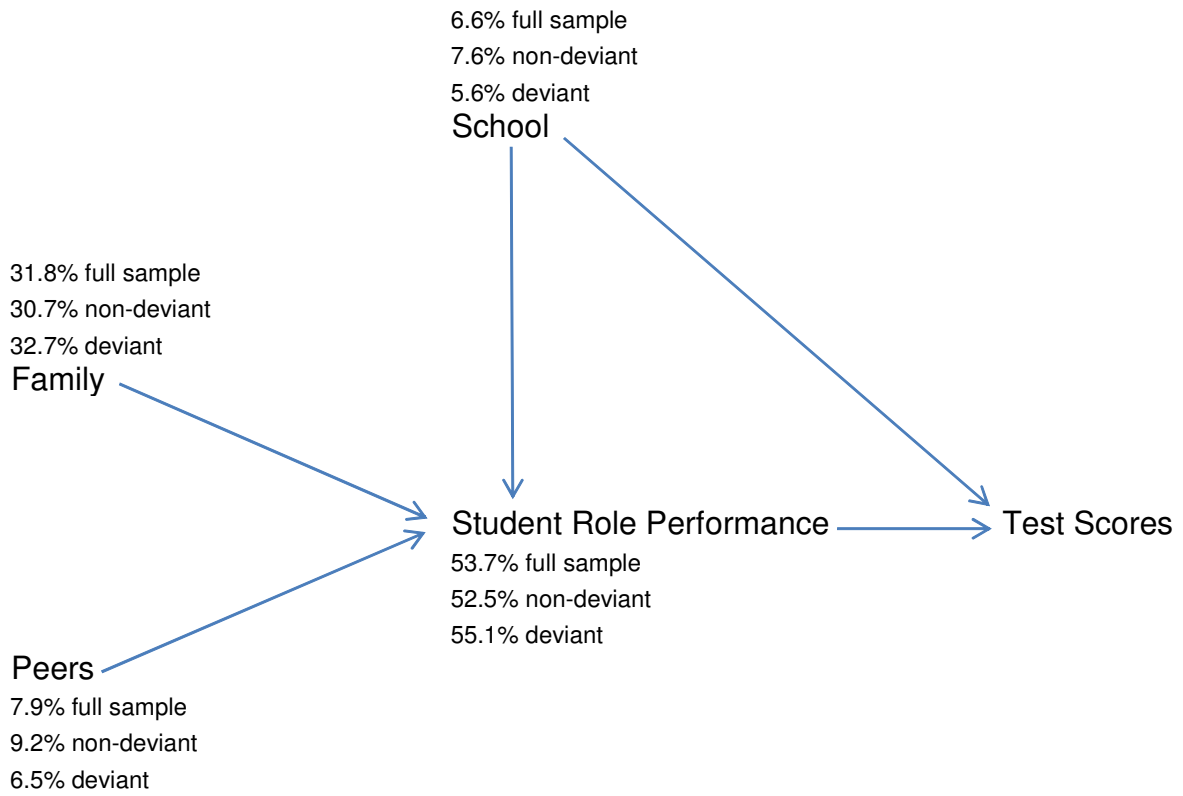
TABLE 2
OLS Regression Analysis of Deviance on Test Scores
(Dependent variable =test scores)

Variables:	Full sample		Not Deviant		²	Deviant	
	unstd.	¹ std.	unstd.	¹ std.		unstd.	¹ std.
Student Role Performance:							
Deviance (0,1)	-0.453 **	-0.024					
Female (0,1)	-1.465 ***	-0.077	-1.592 ***	-0.084		-1.295 ***	-0.071
Minority (0,1)	-3.191 ***	-0.161	-3.287 ***	-0.161		-3.047 ***	-0.163
English is First Language (0,1)	1.943 ***	0.069	2.112 ***	0.074		1.801	0.067
Times Student Held Back a Grade	-4.081 ***	-0.143	-4.599 ***	-0.144	<>	-3.757 ***	-0.149
Number of Remedial Classes	-2.563 ***	-0.084	-2.519 ***	-0.078		-2.491 ***	-0.089
At Least One Disability (0,1)	-6.004 ***	-0.206	-6.168 ***	-0.194		-5.807 ***	-0.223
Student Come To Class Unprepared (0,1)	-1.179 ***	-0.058	-1.772 ***	-0.079	<>	-0.658 **	-0.036
Hours Student Spends on Homework per week	0.084 ***	0.079	0.090 ***	0.087		0.077 ***	0.071
% of Students Prepared in Math Class	1.057 ***	0.036	0.958 **	0.030		1.156 ***	0.045
Number of Times School Contacted Parent	-2.157 ***	-0.110	-2.500 ***	-0.113	<>	-1.929 ***	-0.105
Extracurricular Participation at School (0,1)	0.723 ***	0.036	0.863 ***	0.041		0.618 **	0.033
Participated in College Prep (0,1)	0.558 ***	0.024	0.738 ***	0.033		0.336	0.015
Students who work (0,1)	-0.086	-0.004	-0.217	-0.011		0.035	0.002
School:							
Number of Students in Col. Prep program	0.009 ***	0.030	0.010 **	0.031		0.009 **	0.031
Free lunch Program (lower income)	-0.027 ***	-0.063	-0.028 ***	-0.064		-0.026 ***	-0.065
Scale for learning hindered by sch conditions (0-3)	-0.138	-0.009	-0.170	-0.011		-0.100	-0.007
Index of learning disruptions (0-3)	-1.122 ***	-0.100	-1.198	-0.110		-1.022 ***	-0.092
Scale of admin view of std problems (1-5)	-0.381 *	-0.014	-0.513 *	-0.020		-0.288	-0.011
Scale of security at school (0,1)	-1.538 **	-0.023	-2.254 ***	-0.034		-0.860	-0.013
Family:							
In Single Parent Household (0,1)	-0.457 **	-0.021	-0.799 **	-0.034	<>	-0.210	-0.010
Scale of family communications (1-3)	1.121 ***	0.059	1.022 ***	0.054		1.223 ***	0.065
Number of Siblings	-0.310 ***	-0.051	-0.265 ***	-0.043		-0.356	-0.061
Geographic region of school- South, West (0,1)	-0.270 *	-0.014	-0.333	-0.018		-0.145 ***	-0.008
SES Composite Centile (1-100)	0.089 ***	0.271	0.087 ***	0.270		0.089 ***	0.275
Frequency of Parent Participation (1-4)	-1.116 ***	-0.061	-1.342 ***	-0.072		-0.894 ***	-0.051
How often helps with homework (1-4)	-0.967 ***	-0.047	-0.831 ***	-0.041		-1.088 ***	-0.054
Family Rules (0,1)	-0.595 ***	-0.043	-0.694 ***	-0.050		-0.448 **	-0.033
Peers:							
Siblings Dropped Out of High School (0,1)	-0.447 *	-0.016	-0.693 *	-0.023		-0.189	-0.008
Importance of grades to friends (3-9)	-1.778 ***	-0.085	-2.172 ***	-0.105	<>	-1.294 ***	-0.063
Number of Peers Dropout	-2.130 ***	-0.111	-2.147 ***	-0.110		-2.073 ***	-0.113
(Constant):	67.334		70.065			63.637	
Adjusted R-sq.	0.532 ***		0.525 ***			0.501 ***	
n=	10,926		5,711			5,215	

¹ *** p < 0.001; ** p < 0.01; * p < 0.05

² significant difference between not deviant and deviant at the .05 level or higher

Figure 2
Partitioning Shares of Unique Variance in Test Scores by Model Segment



(Adapted from Wright 2007)