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More Than One Gap:

Dropout Rate Gaps Between and Among Black, Hispanic, and White Students

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This study is the second in a series of investigations designed to explore issues surrounding the achievement gap, or, as concluded in our prior work, achievement gaps. The first study (Carpenter, Ramirez, & Severn, 2006) used data from the National Education Longitudinal Study of 1988 (NELS: 88) to examine nuances of academic achievement gaps among Black, White, and Hispanic students, with a particular focus on not only gaps between groups but also within groups. Findings from the analysis showed unique patterns and multiple achievement gaps, both between and within groups. In fact, results indicated within-group gaps were often more significant than gaps between groups.

This research extends that effort by examining variables associated with dropout behavior as a measure of achievement gaps. As in the first study, comparisons were made among Black, White, and Hispanic students, paying particular attention to gaps in dropout rates both between and within groups. The research progressed in two phases. Phase I used the same variables from the prior investigation to determine if the patterns among independent variables would prove consistent with a different dependent variable (dropout status rather than academic achievement on tests). Phase II added another index of variables more conceptually aligned with dropout behavior.

Results from Phase I showed little consistency with findings from our first investigation and the resulting logistic hierarchi-

Summary

The achievement gap, traditionally measured by test scores, also can be documented by dropout behavior. Examining dropout behavior among Black, White, and Hispanic students, with a particular focus on gaps within groups and not just between Whites and minorities, shows a clearer picture of the achievement gap. The results of our study show multiple achievement gaps both between and within groups, ultimately concluding that within-group gaps were often more significant than gaps between groups. Through hierarchical linear modeling, we found two common predictors for all three groups—being held back and number of suspensions. Hispanic and White students showed three additional predictors in common—time spent on homework, gender, and family composition. White and Black students shared only one common predictor beyond suspensions and being held back: parental involvement. Black and Hispanic students shared no additional common predictors. Finally, race/ethnicity generally proved not to be a significant predictor of dropping out. Gaps within groups may be more significant than those between groups. Such differences further reinforce our concern about the practice of establishing policy initiatives that conflate all minority group students into a monolithic whole. Our research suggests that policy makers and school leaders should craft dropout prevention policies and programs with sufficient flexibility to allow school-level personnel to individualize said policies and practices based on local conditions.

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cal generalized linear models (HGLM) explained little variance. HGLM results from Phase II indicated some notable patterns when comparing models between Black, White, and Hispanic students. Specifically, significant predictors for White and Hispanic students showed some commonality between groups, but significant predictors for Black students showed less overlap with the other two student groups. Finally, Phase II models also explained little overall variance.

Literature Review

In the large and growing literature on closing the achievement gap, a common theme is a singular definition of the term. Yet, as we demonstrated in a prior study, this singular definition fails to describe the actual multilayered definition of differences in achievement, whereby there is not one gap but many gaps (Carpenter et al., 2006). Moreover, while the singular definition typically describes achievement differences between White and minority students, our results indicated within-group gaps can be significantly greater than differences between groups. Indeed, when examining significant predictors among Black, White, and Hispanic students, results indicated substantive overlap between variables in best fit models for each group. By substantive overlap, we mean all three models included socioeconomic status (SES), inclusion in an ESL program, and parental involvement, and coefficient directions across groups were identical. Increases in SES and parental involvement resulted in higher math achievement. Moreover, the Black and White models shared homework as a significant predictor, and Hispanic and White models shared number of units in Algebra I.

A second common theme in the achievement gap literature, including our prior work (Carpenter et al., 2006), is the use of academic achievement as the dominant dependent variable, as often measured by test scores and other related indicators. The use of dropout status to measure gaps in achievement is less common. This is an unfortunate dynamic given the general acknowledg-

ment that dropout rates are comparably greater among minority students (Darling-Hammond, 2006, 2007). Indeed, authors such as Roscigno (1999) note that minority students, particularly Black students, drop out at higher levels than their White counterparts. However, much of this research is based on qualitative studies that are informative, but often lack the depth of investigation and the precision needed to guide viable policy initiatives.

For example, among the most widely circulated reports specifically on the Hispanic dropout problem is Secada et al. (1998). This effort sought to collect expert opinions from researchers and practitioners about the causes and solutions to the problem. Public hearings and commissioned papers were part of the methodology as well. In another example, Neumann (1996) used observations, surveys, and interviews with students, teachers, and school administrators to understand the factors that explained the low dropout rate for Mexican American students in one California high school. He identified a myriad of programs and policies as the reason for the low number of dropouts. In an earlier study of dropouts in California, Pulido (1991) also used interviews and observations to collect data from 18 high schools with high Hispanic enrollments and low dropout rates. His purpose was to identify factors that contributed to the high retention and correlate these findings with the literature about effective schools.

Researchers who take a quantitative approach to the examination of dropping out commonly draw on large national datasets, such as those produced by the National Center for Education Statistics (NCES) or the U.S. Census Bureau. For example, using the High School and Beyond database, Melnick and Sabo (1992) investigated the influence of interscholastic sports on dropping out. They found this aspect of school offered a limited deterrence for a small number of students. Perrira, Harris, and Lee (2006) examined data from the National Longitudinal Study of Adolescent Health and found human, cultural, community, and family capital explained why second generation children of immigrants were at higher risk of dropping out than first generation children. The researchers looked at data from

the in-school survey of students, which included more than 12,000 participants. The study found differences in the influence of the selected variables both between and within ethnic and racial groups. Generational differences also were reported within immigrant groups.

The National Educational Longitudinal Study of 1988 (NELS: 88) also has seen particularly frequent use in dropout research (Warren & Lee, 2003; Yin & Moore, 2004). For example, Lan and Lanthier (2003) used NELS: 88 to measure the relationship between dropping out and academic performance, relationships with teachers, relationships with peers, perceptions of school, participation in school activities, motivation for school work, effort expended in school work, self-esteem, and locus of control. Results showed a developmental pattern of the personal attributes of dropout students and identified the transition to high school as a particularly critical time for interventions. Croninger and Lee (2001) examined the relationship between social capital and dropping out using the NELS: 88 database and discovered that teachers are an important source of social capital, which can reduce the probability of dropping out by as much as half. Students with past academic difficulties find guidance and assistance from teachers especially helpful. Teachman, Paasch, and Carver (1996) likewise studied the relationship between dropping out and social capital using the NELS: 88 database and found changing schools is particularly detrimental.

Some authors, such as Lee and Burkam (2003) and Goldschmidt and Wang (1999), examined school factors and the likelihood of dropping out also using NELS: 88. Lee and Burkam applied multilevel methods to explore the influence of school factors, such as curriculum, size, and social relations, taking into account students' academic and social background, including race/ethnicity. In schools that offer mainly academic courses, students are less likely to drop out. Similarly, students in smaller schools more often stay in school, as do those where relationships between teachers and students are positive. For their part, Goldschmidt and Wang used NELS: 88 data to study early dropouts, those who leave in middle school, and late dropouts,

those who leave in high school, paying particular attention to differences between the groups. Results showed a general difference in significant predictors between the groups, although being held back is the strongest predictor of dropping out for both early and late leavers.

As revealing as these studies are, however, they do not necessarily focus exclusively on differences between groups based on race/ethnicity. The authors do include race/ethnicity in the research, but it is more often used as a covariate. Moreover, a robust collection of empirical studies that examine dropout status as a measure of achievement gap is missing. This study seeks to contribute to that collection by focusing on both dropout status as the measure of achievement gaps and differences within groups as well as between.

Predictors of Dropout Behavior

To do so, we examined within-group differences in the likelihood of dropping out for Black, Hispanic, and White students separately by running hierarchical generalized linear models for each group. We also combined all three groups into one sample to examine if there were significant differences in the likelihood of dropping out based on race/ethnicity. As described in detail below, we proceeded in two phases. Phase I included variables from our first achievement gaps study to determine if those same variables proved significant with dropping out as the dependent variable rather than academic achievement. Because Phase I results proved inconclusive, Phase II introduced an additional set of predictor variables more closely aligned with dropping out.

The Phase I variables included: time spent on homework during the week outside of school, SES, number of units of Algebra 1, participation in an ESL program, language other than English regularly spoken at home, family composition, parental involvement, student race/ethnicity, teacher certification, enrollment, percentage of White students in the school, school type, and urbanicity. To varying degrees, each of these variables has been shown to influence the likelihood of dropping out. Beginning

with variables at the student/family level, Alexander, Entwisle, and Kabbani (2001) considered at-risk factors for dropping out among children in the Baltimore public schools and identified socioeconomic status of the family as a key predictor. Cairns, Cairns, and Neckerman (1989) also found socioeconomic status of the family along with aggressive behavior and poor grades as variables associated with dropping out.

Language issues also have been examined as associated with dropping out, such as Theobald's (2003) study of dropout statistics relative to the kind of English language acquisition program to which Hispanic students were assigned. Additionally, family characteristics, such as family composition, influence decisions to complete high school (Astone & McLanahan, 1994). Rumberger, Ghatak, Poulos, Ritter, and Dornbusch (1990) underscored the value of parent involvement in education, while pointing out that students who are on their own regarding schooling decisions are at higher risk of leaving school before graduation.

How students use their time in and out of school, such as time spent on homework at home or courses they take at school, has been analyzed in connection with dropout statistics. Natriello, McDill, and Pallas (1985) showed a curvilinear relationship between time spent on homework and likelihood of dropping out, and Fratt (2006) reported on the positive relationship between success in algebra courses and completing high school.

Among the school-level variables, several authors have examined the relationships between dropping out and school size and composition of the student body. Merritt (1983) and Alspaugh (1998) concluded students in larger schools drop out more often, as do students in schools with a greater percentage of minorities (Rumberger & Palardy, 2005). School type and urbanicity likewise appear to predict dropping out. Specifically, Hendrie (2004) reported students in private schools drop out less than those in public schools, and rural school students drop out more often than those in other settings (Roscigno & Crowley, 2001). Finally, numerous authors posit a relationship between teacher quality and student outcomes, concluding lower teacher qual-

ity contributes to a greater likelihood of dropping out (Darling-Hammond, 2006; Davis & Dupper, 2004; Heck, 2007).

The Phase II variables included: if the student was ever held back, number of suspensions, inclusion in a dropout program, country of birth, gender, hours per day watching TV, hours per week spent working, hours per week in extracurricular activities, how often the student uses a computer per week, number of siblings who dropped out, 8th-grade reading test score, 8th-grade math test score, 10th-grade reading test score, 10th-grade math test score, percent of 10th graders who drop out before graduation, percent of students in a dropout program, if a test is required for graduation, if the school district allows choice in enrollment, the level of gang problems in the school, and how much influence gangs have in compelling others to dropout.

The decision to include some of these variables is rather self-evident, such as inclusion in a dropout program, number of siblings who have dropped out, percent of students in a dropout program, or the amount of influence gangs play in compelling others to dropout. For other variables, the conceptual alignment is not as self-evident but still conceptually rational. For example, poor academic achievement has been shown to be related to dropping out (Natriello et al., 1985; Reyes & Jason, 1991), as has an increase in the number of hours of paid employment (Warren & Cataldi, 2006; Warren & Lee, 2003), retention in a grade (Frey, 2005; Shepard & Smith, 1990), and exclusion from school for disciplinary reasons (Kokko, Tremblay, Lacourse, Nagin, & Vitaro, 2006).

Still other variables may not appear closely aligned to dropout behavior, but have been shown to be important nonetheless. For example, student gender interacts with dropout behavior when teenage girls are pregnant (Turner, 1995; Warren & Lee, 2003) or begin families without marrying (Cairns et al., 1989). Both circumstances serve as predictors of dropping out of high school (Manlove, 1998). Another includes how students use their time outside of school, such as in extracurricular activities. McNeal (1995) proffered that not all student participation in extracurricular activities has the same effect of deterring students from leaving school. For example, sports and fine arts do appear

to reduce dropout rates of participants, but academic and vocational clubs do not. He went on to point out that the strength of these dynamics supersedes race, economic status, and gender.

Another predictor with somewhat mixed results includes a student's country of birth. Specifically, children of first generation immigrant parents with greater social and cultural capital drop out less often than those with less capital, but that dynamic wanes among children of parents in second generations and beyond (Perrira et al., 2006). Finally, some have examined the relationship between school reform efforts and their effect on dropout activities (Natriello et al., 1985). High-stakes testing (Shriberg & Shriberg, 2006) and exit examinations from high school (Viadero, 2005) are two factors cited as contributing to higher dropout rates.

Methods

Using the aforementioned variables, this study was implemented in two phases. The first phase applied models resulting from our 2006 research (called Study 1 hereafter) using dropout status as the dependent variable, rather than academic achievement. In so doing, we sought to determine if (a) the same predictors from Study 1 and (b) the pattern of within-group and between-group gaps proved consistent with a different dependent variable. Because the models from Study 1 did not produce similar results with the dropout status dependent variable, we proceeded to a second phase wherein we modeled dropout status among Black, White, and Hispanic students using the aforementioned additional index of variables more conceptually aligned to dropping out. Specific procedures in each phase are included below.

Data and Sample

Data for this study came from NELS: 88. Conducted by the National Center for Education Statistics (NCES), NELS: 88

represents the third in a series of longitudinal studies of cohorts of American students. NELS: 88 began collecting data on students during their eighth-grade year and continued into high school, postsecondary education, and into the labor force. The design for NELS: 88 included a questionnaire and a cognitive test for each student in the sample. Questionnaires also were administered to each student's parents, school principal, and two of his or her teachers.

Student questionnaires asked for information about selected background characteristics, including English language proficiency, attitudes, career and college plans, school experience, and extracurricular activities. Principals and headmasters answered specific questions about the school. Parents reported on family resources, parent involvement in school, educational opportunities supported outside of school, and financial planning for college. Two teachers of each sampled student completed a questionnaire designed to collect data and evaluations concerning the educational progress and motivation of the student, the academic difficulty of the class in which the student was enrolled, the school itself, and the teachers' prior educational experiences.

NELS: 88 employed a two-stage, stratified random sample design. To ensure a balanced sample, schools were first stratified by region, urbanicity, and percentage of minority students prior to sampling. The school sample was restricted to regular public and private schools (including independent, Catholic, and other types of religious schools) that enrolled eighth graders. The second stage of the sampling process selected the students within the schools.

Successive follow-ups, or waves, occurred in 1990 (F1—10th grade), 1992 (F2—12th grade), 1994 (F3—2 years after high school), and 2000 (F4—8 years after high school). F1 and F2 included school administrator, teacher, and student questionnaires and student cognitive tests. F2 also included a parent survey and high school transcripts. F3 included only a student survey, and F4 utilized a student questionnaire and college transcripts.

Sample

The total sample in this study includes 17,613 participants measured at F2; 2,010 were Black (10.4%), 2,445 were Hispanic (12.6%), and 13,158 were White (67.9%). Excluded from the sample are students in other racial groups (i.e., Asian, Pacific Islander, American Indian, Alaska Native) or any participants not present in the baseline year (BY), F1, and F2. Those not present in all three waves does not mean dropouts were excluded, as dropping out did not mean elimination from NELS data collection. Data were gathered in all three waves on students regardless of enrollment status. Those not present in all three waves included participants lost through common mortality (e.g., death, choosing to leave the study) or those added after the base year to create freshened samples. Because of missing data, cases also were excluded at the analysis stage. More specific details about sample sizes are included below in discussions about the phases of the study.

Phase I Procedures

Phase I began with a three-level HGLM logistic model using all predictors from Study 1 (Carpenter et al., 2006) and race/ethnicity to examine if significant differences exist in the probability of dropping out based on race/ethnicity. Table 1 lists all of the Study 1 predictors and briefly describes the coding of each. Three-level HGLM modeling was used because the data structure for the first model of this phase includes students nested within teachers nested within schools. Specifically, seven of these variables (time spent on homework during the week outside of school, SES, number of units of Algebra 1, participation in an ESL program, language other than English regularly spoken at home, family composition, parental involvement, and race/ethnicity, dummy coded) are measured at the student/family level. One variable (teacher certification) is measured at the teacher/classroom level. Four variables are measured at the school level (enrollment, percentage of White students in the school, school

type, and urbanicity, which is dummy coded with suburban as the reference). Therefore, the three level model is:

Level 1: $\eta = \pi_0 + \pi_1(\text{homework}) + \pi_2(\text{SES}) + \pi_3(\text{Alg}) + \pi_4(\text{ESL}) + \pi_5(\text{Eng}) + \pi_6(\text{Family}) + \pi_7(\text{Par inv}) + \pi_8(\text{Black}) + \pi_9(\text{Hispanic})$

Level 2: $\pi_0 = \beta_{00} + \beta_{01}\ (\text{Teacher cert}) + r_0$

Level 3: $\beta_{00} = \gamma_{000} + \gamma_{001}(\text{Enroll}) + \gamma_{002}(\text{Per white}) + \gamma_{003}(\text{School type}) + \gamma_{004}(\text{Urban}) + \gamma_{005}(\text{Rural}) + u_{00}$

where η represents the log odds of dropping out of school. The sample sizes for this part of Phase 1 included 6,940 at level one; 2,364 at level two; and 654 at level three for all three groups combined.

Among researchers, practitioners, and policy makers, what constitutes dropping out remains contested (Warren & Halpern-Manners, 2007). For example, NCES proffers no less than four perspectives on dropping out: the event dropout, the status dropout, the status completion rate, and the average freshmen graduation rate (Laird, DeBell, & Chapman, 2006). Greene (2001) attempted to present a clear picture of high school completion by arguing that government generated dropout and graduation rates that misreport and mask the true extent of the problem. His research calculated a graduation rate as the number of regular diplomas issued compared to eighth-grade enrollment 4 years earlier.

NELS: 88 also measures dropout status in different ways. Thus, the variable used in this study for the dependent variable was F2RWTST, which is the participant's enrollment status at F2, similar to the status dropout listed above. In its original form, this variable includes three categories—in school/in grade, in school/out of grade, and dropout. This was transformed into a dichotomous (1 = yes/0 = no) variable where "yes" included all of those who dropped out, and "no" included those who were enrolled, despite in or out of grade status.

Results from this model showed, among other things, that teacher certification was not a significant predictor, β = -.218

Table 1

Independent Variables in Phase I

Variable	Scale of Measurement
SES	Continuous (a composite variable including mother's education, father's education, mother's occupation, father's occupation, and family income)
Student ever in ESL program	Nominal, 1 = yes/0 = no
Language other than English regularly spoken at home	Nominal, 1 = yes/0 = no
Time spent on homework out of school	Ordinal, 0 = none, 1 = 1 hour or less, 2 = 2–3 hours, 3 = 4–6 hours, 4 = 7–9 hours, 5 = 10–12 hours, 6 = 13–15 hours, 7 = more than 15 hours
School enrollment	Ordinal, 1 = 1–399, 2 = 400–599, 3 = 600–799, 4 = 800–999, 5 = 1000–1199, 6 = 1200–1599, 7 = 1600–1999, 8 = 2000–2499, 9 = 2500+
School type	Nominal, 1 = public/0 = private
Urbanicity	Nominal, urban, suburban, rural[†]
Percentage of White students in the school	Ordinal, 0 = 91–100, 1 = 76–90, 2 = 51–75, 3 = 26–50, 4 = 0–25
Teacher certification	Nominal, 1 = standard certification/0 = less than standard certification
Years of Algebra I completed	Ordinal, 0 = less than one year, 1 = one year, 2 = more than one year
Family composition	Nominal, 1 = two parents or guardians in the home/0 = one parent or guardian in the home
Parental involvement	Ordinal, 0 = not involved, 1 = somewhat involved, 2 = very involved
Race/Ethnicity	Nominal, Black, Hispanic, White[‡]

[†] ***Dummy coded, suburban as reference*** [‡] ***Dummy coded***

(.32), odds ratio = .80, p = .498. This proved to be true not only with the entire sample but also when separate models were run for each racial/ethnic group: for Black students, teacher certification β = -.323(.78), odds ratio = .72, p = .682; for Hispanic students teacher certification β = 1.04(1.15), odds ratio = 2.85, p = .364; and for White students teacher certification β = .134(.35), odds ratio = 1.03, p = .708. For models run for each racial/ethnic group, sample sizes were as follows: for Black students, 591 at level one, 375 at level two, and 198 at level three; for Hispanic students, 540 at level one, 354 at level two, and 193 at level three; and for White students, 5,056 at level one, 1,793 at level two, and 577 at level three.

In an effort to make the modeling more parsimonious, we dropped teacher certification and collapsed the three-level modeling into two levels, because teacher certification was the only predictor in level two. The two-level HGLM models then included students nested within schools using the same list of variables described above. Therefore, the models are:

Level 1: $\eta = \beta_0 + \beta_1(\text{homework}) + \beta_2(\text{SES}) + \beta_3(\text{Alg}) + \beta_4(\text{ESL}) + \beta_5(\text{Eng}) + \beta_6(\text{Family}) + \beta_7(\text{Par inv}) + \beta_8(\text{Black}) + \beta_9(\text{Hispanic})$

Level 2: $\beta_{00} = \gamma_{00} + \gamma_{01}(\text{Enroll}) + \gamma_{02}(\text{Per white}) + \gamma_{03}(\text{School type}) + \gamma_{04}(\text{Urban}) + \gamma_{05}(\text{Rural}) + u_0$

Using two level models, we first used the entire sample to examine whether there were significant differences in probability of dropping out based on race/ethnicity. The sample sizes for this model included 11,228 at level one and 762 at level two.

Finally, Phase I ended by running separate models for each racial/ethnic group to facilitate a comparison of models between groups. In so doing, we sought to create the most parsimonious model for each group containing only significant predictors, which then enabled us to determine (a) how much overlap would be present among the resulting models and (b) how well those models corresponded to the ones ascertained in our first study. For this part of Phase I and all of Phase II (described

below), sample sizes for Black students included 1,142 students at level one and 303 students at level two. For Hispanic students, level one had 1,326 students and level two had 328. For White students, level one had 8,010 students and level two had 700.

Phase II Procedures

As discussed below, Phase I results did not produce models of great consistency with Study 1. Therefore, we introduced into the two-level HGLM modeling an additional set of predictor or independent variables, as indicated in Table 2. We did so by retaining the significant predictors from Phase I for each racial/ethnic group and adding the new index of variables to each group's modeling. The additional variables were chosen due to their conceptual tie to dropping out. Of these variables, 15 were student/family-level variables and entered at level one (ever held back, number of suspensions, ever in a dropout program, country of birth, gender, hours per day watching TV, hours per week spent working, hours per week in extracurricular activities, how often uses a computer per week, number of siblings who dropped out, 8th-grade reading test score, 8th-grade math test score, 10th-grade reading test score, and 10th-grade math test score). The remaining six were school-level variables and entered at level two (percent of 10th graders who drop out before graduation, percent of students in a dropout program, test required for graduation, school district allows choice in enrollment, the level of gang problems in the school, and how much influence gangs have in compelling others to dropout).

As in Phase I, multiple models were run for each racial group separately to create parsimonious models, which, in turn, facilitated a comparison of significant predictors between groups. Finally, all of the Phase I and Phase II independent variables were introduced into a full model with race/ethnicity as an additional predictor to measure, again, if differences in probability of dropping out were significant based on race/ethnicity. As in Phase I when using the entire sample for two-level modeling, the sample sizes for this model included 11,228 at level one and 762 at level two.

Table 2

Phase II Independent Variables

Variable	Scales of Measurement
10th grader ever held back	Nominal, 1 = yes/0 = no
How many times suspended from school	Ordinal, 0 = never, 1 = 1–2 times, 2 = 3–6 times, 3 = 7–9 times, 4 = more than 10 times
Student ever in dropout program	Nominal, 1 = yes/0 = no
10th grader's birthplace	Nominal, 1 = USA/0 = elsewhere
Student gender	Nominal, 1 = male/0 = female
If student had siblings who dropped out	Nominal, 1 = yes/0 = no
Hours spent watching TV weekdays	Ordinal, 0 = none, 1 = less than 1 hour, 2 = 1–2 hours, 3 = 2–3 hours, 4 = 3–4 hours, 5 = 4–5 hours, 6 = more than 5 hours
Hours spent working during week	Ordinal, 0 = 0–10, 1 = 11–20, 2 = 21–30, 3 = 31–40, 4 = more than 40
Hours per week in extracurricular activities	Ordinal, 0 = none, 1 = less than 1 hour, 2 = 1–4 hours, 3 = 5–9 hours, 4 = 10–19 hours, 5 = 20 hours or more
How often uses computer at home	Ordinal, 0 = none, 1 = less once a week, 2 = once or twice a week, 3 = every day
8th-grade reading test score	Continuous, estimated number right using IRT
8th-grade math test score	Continuous, estimated number right using IRT
10th-grade reading test score	Continuous, estimated number right using IRT
10th-grade math test score	Continuous, estimated number right using IRT
Percent of 10th graders who drop out before graduation	Continuous
Percent of students in dropout program	Ordinal, 0 = 0–10, 1 = 11–24, 2 = 25–49, 3 = 50–74, 4 = 75–100
Gang activity a problem at school	Ordinal, 0 = no problem, 1 = minor problem, 2 = moderate problem, 3 = serious problem
Gangs influence others to dropout	Ordinal, 0 = no influence, 1 = small, 2 = some, 3 = moderate, 4 = major
School allows some element of enrollment choice	Nominal, 1 = yes/0 = no
Students must pass test to receive diploma	Nominal, 1 = yes/0 = no

Limitations

In reading the results below, several limitations are important to hold in mind. First, the findings can only be generalized to high school students. As Goldschmidt and Wang (1999) demonstrated, dropping out is a phenomenon that also includes middle school students. However, this study does not measure dropping out at the eighth-grade year. Another limitation is the small sample sizes among Black and Hispanic students in some of the modeling. One of the most significant implications was the inability to include school type (public/private) in the Black and Hispanic models during Phase II. Results below suggest significant differences based on school type, but prohibitively small sample sizes did not facilitate confirmation of this.

Two limitations come with the use of NELS: 88. The first is preset operational definitions of variables that come with the use of datasets of this type. Moreover, as any researcher who works with such datasets recognizes, the preset scales of measurement can be limiting, particularly a preponderance of nominal scales. Second, although the NELS: 88 data remain an invaluable dataset in research of this type, it is growing somewhat dated. Indeed, students in this study were high school seniors in 1992—predating major educational changes, including implementation of state standards, choice (e.g., tax credits, charter schools, interschool and interdistrict transfers), high-stakes testing, and NCLB. Despite such limitations, it was important that we use NELS: 88 to maintain consistency with our first study and also because the new NCES longitudinal study (ELS) does not gather the breadth of variables included in NELS.

Results

The presentation of results begins with dropout statistics for the entire sample and for each group separately. Following that, the HGLM results are presented first for Phase I and then for Phase II.

Dropout Statistics

Table 3 includes dropout rates for the nominal variables and overall, for the entire sample, and for each racial/ethnic group. As indicated, the overall dropout rate in this sample was 9.7%. When disaggregated by race/ethnicity, the dropout rate among Black and Hispanic students is nearly identical at 15.0% and 15.4% respectively. However, among White students, the dropout rate is nearly half that at 8.4%. When further disaggregated by the various nominal independent variables included in this study, results are largely consistent with prior findings or conceptual expectations. For example, students in private schools drop out less often than those in public schools and those in single parent homes drop out more often than students with two parents/guardians in the home.

However, some interesting trends are worth noting. First, dropout rates for those who have been held back are quite large and consistently so across groups. Second, there are large differences between those who participate in dropout prevention and those who do not. For the entire sample and for each subgroup, the percentages of dropouts are no less than two times as great for those who participate in such programs compared to those who do not. This is not a cause and effect observation, of course, since the presence of a dropout prevention program is likely an effect in this case, rather than the cause of greater dropout rates. Although not large, it is interesting to note the differences among students based on country of birth. Those born outside the U.S. tend to drop out less often than those born here. Finally, those with siblings who dropped out themselves tend to drop out more often, although it appears not to be as severe for Black students as it is for Hispanics and especially for White students.

Phase I

Table 4 includes models with all of the variables from our first study for each racial/ethnic group. As indicated by the asterisks, the groups share some overlap in variables that significantly

Table 3

Descriptive Statistics for Dropout Status

	Whole Sample		Black		Hispanic		White	
	% not a dropout	% dropout	% not a dropout	% dropout	% not a dropout	% dropout	% not a dropout	% dropout
Urbanicity								
Urban	89.4	10.6	83.2	16.8	84.2	15.8	92.2	7.8
Suburban	91.5	8.5	86.9	13.1	85.4	14.6	92.3	7.7
Rural	89.6	10.4	85.8	14.2	84.3	15.7	90.3	9.7
Ever in ESL								
Yes	89.0	11.0	79.0	21.0	84.8	15.2	91.3	8.7
No	91.9	8.1	88.0	12.0	87.6	12.4	92.7	7.3
Language other than English at home								
Yes	90.0	10.0	83.1	16.9	87.0	13.0	90.5	9.5
No	91.6	8.4	86.5	13.5	81.8	18.2	92.6	7.4
Family composition								
Single parent	85.5	14.5	84.8	15.2	77.0	23.0	87.2	12.8
Two parents	93.3	6.7	92.0	8.0	87.9	12.1	93.8	6.2
School type								
Public	89.1	10.9	83.9	16.1	83.9	16.1	90.4	9.6
Private	98.1	1.9	97.5	2.5	94.8	5.2	98.3	1.7
Ever in dropout prevention								
Yes	70.4	29.6	72.0	28.0	68.7	31.3	69.8	30.2
No	92.0	8.0	87.1	12.9	87.8	12.2	93.0	7.0

	Whole Sample		Black		Hispanic		White	
	% not a dropout	% dropout	% not a dropout	% dropout	% not a dropout	% dropout	% not a dropout	% dropout
Ever held back								
Yes	78.0	22.0	74.9	25.1	73.1	26.9	79.4	20.6
No	94.0	6.0	90.6	9.4	89.4	10.6	94.7	5.3
Teacher certification								
Less than standard	93.5	6.5	89.7	10.3	85.5	14.5	94.8	5.2
Standard	91.9	8.1	87.1	12.9	87.6	12.4	92.9	7.1
Test required for graduation								
Yes	90.0	10.0	87.2	12.8	86.4	13.6	91.0	9.0
No	93.6	6.4	85.3	14.7	88.1	11.9	94.1	5.9
District allows for enrollment choice								
Yes	90.4	9.6	86.3	13.7	85.9	14.1	91.4	8.6
No	94.8	5.2	91.1	8.9	90.9	9.1	95.3	4.7
Sex								
Female	91.5	8.5	88.0	12.0	85.9	14.1	92.5	7.5
Male	91.3	8.7	85.9	14.1	84.9	15.1	92.7	7.3
Country of birth								
Outside USA	92.2	7.8	93.3	6.7	87.9	12.1	92.7	7.3
USA	91.6	8.4	86.8	13.2	86.3	13.7	92.7	7.3
Siblings dropout								
Yes	80.5	19.5	80.9	19.1	78.0	22.0	80.4	19.6
No	93.7	6.3	88.3	11.7	90.3	9.7	94.5	5.5
Totals	90.3	9.7	85.0	15.0	84.6	15.4	91.6	8.4

predict dropping out, but the overlap is not as close as in our first study. First, none of the variables act as common predictors across all three groups, and Black students share only one predictor, parental involvement, with only one group, White students. White and Hispanic students, however, share three predictors (time spent on homework, units of Algebra 1, and family composition). Although coefficients for the first of those are similar between groups, the latter two variables appear to act as comparably stronger predictors for Hispanic students. Although not shown here, we ran models for each group with only the significant predictors, and the coefficients and intraclass correlations (ICC) results are nearly identical to those shown in Table 4.

As to the model statistics, the models account for small amounts of variance. Using Snijders and Bosker's (1999) formulation of an R^2 equivalent for multilevel logistic analyses, the empty model for White students accounted for 1.9% of the variance, the model with all variables (shown in Table 4) accounted for 2%, and the final model with only significant predictors accounted for 2.1%. For Black students, the empty model accounted for 3.4%, whereas the model with all variables and the final model with only the significant predictors both explained 3.1%. For Hispanic students, both the empty model and the model with all of the variables accounted for 3.7%, and the final model with only the significant predictors explained 3.5%.

When the full model is run with the addition of race/ethnicity as a predictor, results indicate one significant difference in likelihood of dropping out based on race/ethnicity. Although the difference between White (as reference category) and Hispanic students is not statistically significant (Hispanic β = -.309, p = .352) and the difference between Black and Hispanic (as reference category) students is not statistically significant (Black β = -.459, p = .228), the difference between White (as reference category) and Black students is statistically significant (Black β = -.769, p = .007). Therefore, as in our first study, it appears that achievement gaps within groups, as measured by dropping out, may be larger than gaps between groups. However, because Phase I model statistics proved somewhat inconclusive, we proceeded to Phase II.

Table 4

Phase I Models With Variables From Study 1 for Each Group

	Black		Hispanic		White	
Fixed Effects	Coefficient (*SE*)	Odds Ratio	Coefficient (*SE*)	Odds Ratio	Coefficient (*SE*)	Odds Ratio
Model for the Intercepts						
Intercept	-1.08 (.89)	.337	.376 (.89)	1.45	-2.36 (.63)	.094*
Enrollment	-.072 (.14)	.930	.006 (.12)	1.00	-.001 (.05)	.998
School type					1.69 (.56)	5.42*
Percent White	-.141 (.24)	.867	.312 (.20)	1.36	.205 (.08)	1.22*
Urban	.928 (.77)	2.53	-.989 (.66)	.371	.406 (.27)	1.50
Rural	.680 (.74)	1.97	-.132 (.71)	.875	-.204 (.23)	.814
Model for the Slopes						
Time on homework	-.372 (.21)	.689	-.468 (.19)	.625*	-.353 (.07)	.702*
SES	-.118 (.49)	.887	.347 (.53)	1.41	-.652 (.17)	.520*
Units of Algebra 1	-.524 (.45)	.591	-1.36 (.47)	.256*	-.512 (.16)	.598*
Inclusion in ESL program	1.93 (.57)	6.95*	-.327 (.71)	.720	-.239 (.29)	.786
Language other than English at home	.069 (.74)	1.07	.149 (.59)	1.16	.382 (.30)	1.46
Family composition	-.445 (.52)	.640	-1.28 (.58)	.277*	-.597 (.21)	.550*
Parental involvement	-1.38 (.45)	.250*	-.575 (.38)	.562	-.944 (.14)	.389*
Random Effects	Variance	ICC	Variance	ICC	Variance	ICC
Intercept	.676	.171	.038	.011	.310	.086
ICC empty	.090		.027		.161	

*$p < .05$.

Phase II

Table 5 includes models for all three groups of students using a set of dropout-related variables in addition to those from Study 1. Note that the models in Table 5 represent final models for each racial group. Multiple models were run for each group to determine a final parsimonious model with statistically significant predictors. For the sake of space, only the final models are presented here. As Table 5 indicates, all three groups share two common predictors, number of suspensions and being held back. The strength of the coefficients is quite similar for all groups on being held back and also similar for Black and White students for the number of suspensions. Moreover, the influence of those predictors is the same for all three groups: Being held back and more suspensions increase the likelihood of dropping out.

Beyond that, White and Hispanic students have three other predictors in common—time spent on homework, gender, and family composition. Although the strength of the predictors differ somewhat between groups, the relationship between those variables and likelihood of dropping out are the same for White and Hispanic students. For example, more time on homework, being a male, and having two parents in the home decreases the likelihood of dropping out for White and Hispanic students. White and Black students share only one common predictor beyond suspensions and being held back: parental involvement. Although the strength of the predictor differs somewhat, the direction of the influence is the same for both groups: Greater parental involvement decreases the likelihood of dropping out. Other than being held back and number of suspensions, Black and Hispanic students share no other common predictors.

Notably, no level-two variables proved significant for Black and Hispanic students. Of course, if data limitations did not preclude the inclusion of school type, it is entirely possible that school type could be significant for these two groups. Even were this variable to be included, it is still notable that school-level variables appear to play a small role for those groups both generally and compared to White students.

Table 5

Models With Significant Study 2 Variables for Each Group

	Black		Hispanic		White	
Fixed Effects	Coefficient (*SE*)	Odds Ratio	Coefficient (*SE*)	Odds Ratio	Coefficient (*SE*)	Odds Ratio
Model for the Intercepts						
Intercept	-2.16 (.33)	.114	-.200 (.44)	.818	-2.59 (.64)	.052
School type					1.36 (.55)	3.91
Percent White					.160 (.08)	1.17
Gangs influence dropouts					.242 (.07)	1.27
Model for the Slopes						
Number of suspensions	.737 (.26)	2.09	.376 (.16)	1.45	.721 (.15)	2.05
Time on homework			-.372 (.12)	.688	-.149 (.07)	.860
Time in extracurricular activities					-.355 (.08)	.701
10th-grade math test score					-.030 (.00)	.969
Gender			-.733 (.32)	.480	-.418 (.20)	.658
Units of Algebra 1			-1.20 (.31)	.299		
Inclusion in dropout program			2.22 (.66)	9.21		
Siblings dropped out					.763 (.22)	2.14
Ever held back	1.10 (.36)	3.03	1.17 (.34)	3.24	.962 (.22)	2.61
Inclusion in ESL program	1.01 (.41)	2.75				
Family composition			-1.01 (.35)	.361	-.558 (.23)	.571
Parental involvement	-1.06 (.30)	.343			-.743 (.15)	.475
Random Effects	Variance	ICC	Variance	ICC	Variance	ICC
Intercept	.260	.073	.093	.028	.171	.041
ICC empty	.090		same		.160	

Note. **All reported values are statistically significant at $p < .05$.**

Comparing these findings to the Phase I results, the new models do not account for substantively more variance. The Phase II final model for White students (shown in Table 5) accounted for 2.1%, compared to 2% in Phase 1 and 1.9% in the empty model. For Black students, the model shown in Table 5 accounted for 3.5%, compared to 3.1% for the final model in Phase I and 3.4% for the empty model. For Hispanic students, the Phase II final model (shown in Table 5) accounted for 3.7%, compared to 3.5% for the Phase I final model and 3.7% for the empty model.

The final two models included (a) all Phase I and Phase II predictors plus race/ethnicity as a predictor and (b) all significant Phase I and Phase II predictors plus race/ethnicity. With all Phase I and Phase II predictors in the model, there were no significant differences in likelihood of dropping out based on race/ethnicity. Again, for sake of space, all of the variables and their coefficients are not presented here, but looking just at race/ethnicity, with White students as the reference, Black β = -.023(.20), odds ratio = .97, p = .334; and Hispanic β = -.026(.21), odds ratio = .97, p = .517. With Hispanic students as the reference, Black β = -.129(.68), odds ratio = .97, p = .850; and White β = .364(.56), odds ratio = .1.44, p = .517. When only statistically significant Phase I and Phase II predictors are included in a model with race/ethnicity, there were still no statistically significant differences in likelihood of dropping out based on race/ethnicity. With White students as the reference, Black β = -.023(.20), odds ratio = .97, p = .913; and Hispanic β = -.026(.21), odds ratio = .97, p = .900. With Hispanic students as the reference, Black β = -.003(.26), odds ratio = .1.00, p = .989; and White β = .026(.21), odds ratio = .1.02, p = .900.

Taken together, such results point to several consistencies across phases and studies. First, gaps within groups appear more significant than gaps between groups. Second, the factors that appear important in students' likelihood of dropping out seem similar for Whites and Hispanics. However, as in our prior study, common predictors between Black students and those in the other two groups show less overlap. In addition to such

similarities, some differences between this and our prior study are notable. First, significant predictors for dropping out are not consistent with those for academic achievement, as indicated in our prior study. Second, the aforementioned lack of overlap between Black students and the other two groups is more pronounced in the dropout data than in the academic achievement results. Finally, explained variance in the various models for each group was quite small.

Discussion and Conclusion

This study sought to extend earlier research on achievement gaps (Carpenter et al., 2006) by testing prior results on a different dependent variable. Specifically, our prior study found much overlap in significant predictors of academic achievement between Black, Hispanic, and White students, particularly the latter two groups. Moreover, we discovered within-group gaps were more significant than gaps between groups. The present study used the same index of variables to determine if the results would be consistent using dropout status as the dependent measure. Results indicated far less overlap of significant predictors across groups, as compared to the first study.

Therefore, we undertook a second phase wherein we added another index of variables more closely tied to dropping out. The results from the second phase indicated slightly more overlap, as compared to Phase I, with significant predictors among all groups: number of suspensions and being held back a grade. Hispanic and White students showed three additional predictors in common—time spent on homework, gender, and family composition. White and Black students share only one common predictor beyond suspensions and being held back, parental involvement, and Black and Hispanic students share no additional common predictors. The Phase II models also accounted for only slightly more variance than those in Phase I. Finally, given that race/ethnicity generally proved not to predict drop-

ping out, we conclude, as in our first study, that gaps within groups may be more significant than those between groups.

This is not to say, however, that differences between groups are inconsequential. In fact, although differences in dropout status based on race/ethnicity generally proved nonsignificant, the differences in significant predictors between Black students and the other two groups are important. Such differences further reinforce our concern from the first study about the practice of establishing policy initiatives that conflate all minority group students into a monolithic whole. Our research suggests that policy makers and school leaders should craft dropout prevention policies and programs with sufficient flexibility to allow school-level personnel to individualize said policies and practices based on local conditions. Consistent with other dropout research in the Black population (Roscigno, 1999), these findings suggest such flexibility would be critical. The intention in this research was not necessarily to discern *the* model of predictors for each group, which would enable us to speak authoritatively about implications for Black, Hispanic, and White students. Rather, we sought to test the prevailing conceptualization of a *singular* achievement gap among researchers, policy makers, and practitioners. We contend further research needs to consider each group separately in order to determine unique causes and effects present within groups.

Also in concert with prior research (Allensworth, 2005; Goldschmidt & Wang, 1999), our results point to a variable that consistently predicts dropping out of school across all groups: being held back. It is outside the purview of this treatment to review the substantial literature on grade retention, but to call it a highly debated and an often contentious issue borders on understatement. As Bali, Anagnostopoulos, and Roberts (2005) discussed, retention policies are shaped by more than student success; they are, in fact, the result of a political process involving those in and outside of school systems.

Although the negative consequences associated with retention are well known, policy proponents counter that adverse effects should be more than offset by beneficial effects from ris-

ing achievement as measured by tests and other such measures. To date, that assertion remains unsettled, far more so than the robust evidence concerning the relationship between retention and dropping out. Yet, even this robust evidence arguably suffers from one potential shortcoming, whether retention causes dropout behavior or merely indicates a more substantial root cause. We strongly suspect the latter and believe this is a question deserving of more scholarly attention.

A notable inconsistency between our findings and the assertions of others seems to lie in the importance of school-level variables in predicting dropout behavior. For example, although Darling-Hammond (2007) concluded, as we do herein, that educational outcomes, including high school completion, are not necessarily an outcome of race/ethnicity, she asserted "outcomes for students of color are much more a function of their unequal access to key educational resources, including skilled teachers and quality curriculum" (p. 320). Indeed, she contended, "These compounded inequalities explain much of the achievement gap . . ." (p. 321). Our results suggest school-level variables play only one part, and perhaps not even the biggest part, of explaining differences in educational outcomes between and among students. Indeed, student-level variables appear to play a more important role in the models herein. We say "appear" because 7 of the 12 student-level variables significant for any group in these models are contextually tied to schools, variables such as being held back, number of suspensions, and units of Algebra 1. Therefore, although many of these variables are at the student level, we believe the complexities and nuances in predicting dropout behavior remains largely unexplained, either by us or by other authors.

Although not the central focus of the study, another finding of note that deserves discussion is the dropout rate itself. As referenced earlier, there is much disagreement about authentic dropout rates, which is largely a reflection of the shifting definitions of what constitutes a dropout and different data sources (Pinkus, 2006; Warren & Halpern-Manners, 2007). For example, data in this study indicate comparably small dropout rates.

The overall rate was 9.7%: 15% for Black students, 15.4% for Hispanics, and 8.4% for Whites. But dropout rates reported for the same year (1992) by NCES (1995) indicate 11% overall, 7.7% for White students, 13.7% for Black students, and 29.4% for Hispanic students. And examining the even larger differences in dropout rates reported from various other sources in other years (Greene & Winters, 2005; Mishel, 2006) leads one to question how much of the dropout problem is the definition of the problem itself. Warren and Halpern-Manners (2007) provide an excellent analysis of the consequences of different definitions of dropout.

Such vagaries and inconsistencies also lead to uncertainty about the reported economic implications of dropouts. For example, one report estimates that the dropout rate in 2004, which was estimated at 32%, costs the United States more than $325 billion in lost wages, taxes, and productivity over the students' lifetimes (Alliance for Excellent Education, 2006). Another recent report estimated that the 2007 class of high school dropouts in Texas would cost state taxpayers $377 million this year and every subsequent year over the course of the students' lifetimes (National Center for Policy Analysis, 2007). Although dropping out of school unquestionably places students at a marked economic disadvantage and arguably costs the greater community more in lost productivity and tax revenue, significant dropout residuals evident between reporting sources make these aforementioned costs more guesswork than solid estimates.

Such disparities further support our assertions generated by the findings in both this and our previous study (Carpenter et al., 2006). Namely, all of the effort currently dedicated to closing the achievement gap is likely to fall far short of the mark as long as the problem is defined as a singular gap between racial/ethnic groups while ignoring more significant within-group differences. This means policy efforts at various levels (local, state, and national) will result in further failed attempts to ameliorate the dropout problem and close gaps where they exist. Such failures inevitably include wasted resources, disenfranchised educators and constituents, and lost opportunities. Exacerbating this

dynamic is the shifting definition of dropout, which means policies and programs to address the problem likely will be more costly trial and error than productive solutions. Finally, making substantive progress in reducing dropout rates will require schools and districts to acknowledge and challenge assumptions (theirs and others) about the achievement gap and to analyze critically their particular student populations in a multifaceted approach.

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