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Closing the Achievement Gap on ACT & SAT

Question: What factors have the greatest impact on the achievement gap among sub-groups?

In a Nutshell

Research has focused on four groups of factors and the achievement gap: (1) student characteristics (high school GPA, attendance patterns, courses taken in high school, participation in extra-curricular activities, etc.); (2) family characteristics (family structure, in home, parents' level of education, mobility, etc.), (3) school-based characteristics (instructional strategies, class size, expectations, curriculum, staff-collegiality, etc.), and (4) socio-cultural factors (cultural attitudes, racism, differential social 'privileges,' etc.).

The factors with the consistently largest impact on SAT and ACT scores are student academic characteristics: their grade point average, their coursework, their academic preparation. While you can't discount the impact of the other factors it is clear that school-level factors account for the greatest portion of the achievement gap. To reduce the SAT/ACT achievement gaps it is important to have students take rigorous high school classes and assure their success in those classes.

Introduction

Equity is a deeply held social value among Americans. The American public expects schools to provide equal opportunity to all students, and Americans are concerned if there is evidence that certain student groups are not learning as much as other student groups. So, in terms of public education, many people (including parents, community members, and various social groups) express concern about various so-called "achievement gaps". These concerns are often translated into public policies surrounding schools

that, in turn, put significant pressure on educators to understand the nature of these “achievement gaps” and address them in appropriate ways.

To understand the nature of any achievement gap, we must first define the terms “achievement” and “gap”:

“Achievement” refers to the level of student academic learning. For good or ill, these levels of academic learning are primarily measured through common standardized tests, such as the state-mandated tests used to address the federal No Child Left Behind program (e.g., the Michigan Educational Assessment Program and the Michigan Merit Examination), the Scholastic Aptitude Test (SAT), and the American College Testing (ACT) program, among others.

A “Gap” refers to a difference in achievement levels between any two specific social categories, such as two different ethnic categories or the two gender categories.

Although “achievement gaps” can and should be examined across different types of measures of student learning (including measures of academic, social, emotional, and psychological development using performance assessments, portfolios, and other types of authentic assessments) and across different types of social categories (including social class, special needs, and linguistic diversity), the public and the education profession tend to focus on achievement gaps on standardized tests across ethnicity and gender.

This research brief will focus on the factors that impact one fairly specific achievement gap: The differences in SAT/ACT scores across ethnic/racial groups: Caucasian, African-American, Hispanic, and Asian American students.

The Ethnicity Gap in SAT/ACT Scores

The SAT is intended to be an “aptitude” test, meaning that it measures “ability to learn”, similar to an IQ test. It consists of three major sections: critical reading (including holistic interpretation and sentence-level comprehension), mathematics (including numbers/operations, algebra/functions, geometry, and probability/statistics/data analysis), and writing (including grammar, usage, and diction). In contrast to the SAT, the ACT is an “achievement” test, meaning that it measures levels of student learning, not “ability to learn”. (Note: technically, the gaps in the SAT would constitute “aptitude gaps”, not

“achievement gaps”. However, most researchers acknowledge the challenge in truly distinguishing “aptitude” from “achievement”. Almost all tests measure some combination of aptitude and achievement. In this research brief, we will consider “aptitude” and “achievement” as a single construct). The ACT consists of four major sections: English, mathematics, reading, and science. There is also a fifth optional section on writing. Both the SAT and ACT are constructed to measure student academic readiness for college-level work.

In general, Caucasian students have higher SAT/ACT scores across all areas, as compared to African Americans, Hispanics, and Asian American/Pacific Islanders (with one exception: Asian/Pacific Islander students score higher on mathematics than Caucasian students). With some exceptions, African American students have the lowest scores, with Hispanic/Native American students higher, and Asian American students even higher.

Factors Impacting the Ethnicity Gap in SAT/ACT scores

Typically, researchers focus on four areas of factors impacting these achievement gaps:

- 1) *Student characteristics*: high school grade point averages (GPA), high school attendance (truancy, dropout), high school coursework, test preparation, time on homework, part-time jobs, extracurricular activities, perception of self, motivation, ESL status, physical activity, diet, crime, alcohol/drug use, and various personal recreation behaviors such as television viewing, video gaming, texting, etc.;
- 2) *Family characteristics*: family structure (single parent home), income, parents’ level of education, mobility, family background, home atmosphere, family behaviors/support, etc.;
- 3) *School-based characteristics*, including:
 - a. Teacher/classroom characteristics: instructional strategies, classroom management, classroom curriculum design, class size, assessment practices, teacher expectations, and teacher level of education, among others;
 - b. School building characteristics: curriculum, school size, peer relationships, staff collegiality/professionalism, parental involvement, school-community relations, school climate/culture, and other measures of school “quality”, among others.
- 4) *Socio-cultural factors*: cultural attitudes, racism, and differential social “privileges” which further impact student social and cultural “capital”.

This list is only representative. There are other characteristics that have been studied related to these achievement gaps. For example, researchers have also focused on many issues related to test bias.

Overall, research studies indicate that all of these factors influence the achievement gaps. The critical question is: Which factors have the largest impacts?

Comparing the Impact of Factors

Of the characteristics listed above, the factors with the consistently largest impact on SAT and ACT scores are NOT the family characteristics – they are the student *academic* characteristics: their grade point averages and their coursework (e.g., number of “core” classes taken in English, mathematics, and science). For example, consider the following analysis of the ACT ethnicity gaps (similar results are found for the SAT):

“Researchers have examined the relative effects of course work, course grades, student and high school characteristics, and educational plans on ACT performance by race/ethnicity and/or gender (e.g., Noble, Crouse, Sawyer, & Gillespie, 1992; Noble & McNabb, 1989; Chambers, 1988). Their findings suggest differential performance may be largely attributable to differential academic preparation across racial/ethnic or gender groups... About 30% to 55% of the variability in ACT scores was attributable to specific course work taken and the high school GPA in 4 core areas... The additional explained variability resulted from background characteristics, educational-related factors and activities, perception of self (5%–13%), and high school attended (4%–7%). No more than 2% of additional variability was associated with race/ethnicity or gender.” (ACT, 2007, pp. 71-72).

These results are not surprising since these student academic characteristics (GPA and coursework) are the closest surrogate measures of SAT/ACT academic performance. Many other studies support the conclusion that student characteristics are the most direct determinants of student achievement (see, for example, Ma and Xu, 2004).

On the surface, it would appear that, in order to most effectively reduce the SAT/ACT achievement gap, educators should be encouraging students to take the high school core classes, and then help students excel in these classes. However, there are a number of reasons that this cannot be the end of the story. Most educators argue that their ability to help students excel in these classes is impacted by the other characteristics: student non-academic behaviors, family characteristics, socio-cultural factors, and school-based characteristics). Only the last area is within their direct control.

So, in order to understand the SAT/ACT achievement gap, we must understand the high school GPA “gap”, and other earlier academic behavior gaps. This means we must turn to a much broader research base. This research base indicates that these academic gaps appear at the earliest academic levels, starting at preschool and even earlier.

Unfortunately, it is quite challenging to identify, in any definitive way, which of these other sets of characteristics have the greatest impact on these earlier academic gaps, even given the significantly greater amount of research addressing these areas (see, for example, Barton and Coley, 2009). Ironically, much of the research is contradictory. There are various reasons for this: First, these various factors are not independent, and thus, their individual impacts are difficult to separate. For example, student academic behaviors (such as high school attendance and grades) are impacted by non-academic behaviors, which in turn, are impacted by family characteristics AND by school-based characteristics in complex and interactive ways. Second, the comparative impact of family vs. school-based characteristics requires the use of advanced statistical methods, but there are few databases that contain appropriate measures across all areas (non-academic behaviors, family characteristics, school-based characteristics, and socio-cultural factors) that allow this type of statistical comparison.

In spite of these limitations, some overall conclusions can be drawn. Current research indicates that family characteristics have a somewhat larger impact than school-based characteristics (see, for example, Education Is Freedom, 2010; Montoya, 2010). This is not surprising since family interactions are more individualized and impact students over a longer time period than any given classroom interaction or school-based characteristic. Within these family characteristics, the factors with the largest impact seem to be the quantity and quality of parent-student interactions (in terms of level of vocabulary and critical thinking-based discussions (see, for example: Jones et al., 2007). Of course, parent income, parental education, parent linguistic background, and family structure do impact these interactions (see, for example, Phillips et al., 1998).

However, school-based characteristics do have a significant impact, and educators should focus on these characteristics, since they do not control, and have limited ability to “compensate” for, family characteristics. Besides, attempts to “compensate” for family characteristics carry the risk of reinforcing a “deficit” perception of certain ethnic groups that may worsen the achievement gap by negatively impacting teacher expectations. In the final analysis, research indicates that school-based factors can, in certain situations, overcome the effects of family characteristics (see, for example, Alvarez, 2004).

Specifically, within these school characteristics, current research indicates that the factors with the largest impact seem to be the quantity and quality of relationships and human interactions, including teacher-student interactions and peer interactions (see, for example, Marzano et al., 2005). This is parallel to the results within the family characteristics – it is really about relationships. However, educators need to recognize and deal with a broad array of factors which frame and impact these relationships. For a good comprehensive list, the reader can turn to an earlier Principal Partnership brief by Mike Muir: “Closing The Achievement Gap” (<http://www.principalspartnership.com/achievegap.pdf>).

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Additional References on the Achievement Gaps

What Are Some Causes of the Achievement Gap? AchievementGap.Info:

<http://www.achievementgap.info/causes.html>

The Achievement Gap: Causes (The Association of Supervision and Curriculum Development – SmartBrief):

<http://alquemie.smartbrief.com/alquemie/servlet/encodeServlet?issueid=51F2E644-4620-4FE1-92B7-34A018A931B3&lmid=archives>

Achievement Gap: Education Week

<http://www.edweek.org/ew/issues/achievement-gap/>

What Do We Know about the Achievement Gap? (National Council of Teachers of English):

<http://www.ncte.org/policy-research/wwk/achievementgap>

Achievement Gaps: National Education Association

<http://www.nea.org/home/AchievementGaps.html>

The Achievement Gap (US Department of Education NCLB articles):

<http://www.ed.gov/nclb/accountability/achieve/edpicks.jhtml?src=ln>

Additional Resources on Closing the Achievement Gap

Annenberg Challenge Meeting on Closing the Achievement Gap in Secondary Schools Bibliography (Annenberg Institute):

<http://www.annenberginstitute.org/Challenge/pubs/cj/cjv5n2.pdf>

Closing the Achievement Gap Series (the Annie E. Casey Foundation):

<http://www.aecf.org/KnowledgeCenter/PublicationsSeries/ClosingAchievementGap.aspx>

Closing the Achievement Gap: Education Commission of the States

<http://www.ecs.org/html/issue.asp?issueid=194>

Closing the Achievement Gap: Selected Research & Readings (The Education Commission of the States)

<http://www.ecs.org/html/IssueSection.asp?issueid=194&s=Selected+Research+%26+Readings>

Closing the Achievement Gap (the National Governors Association Center for Best Practices):

<http://www.subnet.nga.org/educlear/achievement/>

What Can Schools Do to Reduce the Achievement Gap? (National School Public Relations Association):

http://www.nspra.net/synergy/contentexport/831/6/index1_1.htm

Closing the Achievement Gap (the Public Broadcasting System):

<http://www.pbs.org/closingtheachievementgap/>

Closing the Achievement Gap: Achieving Success for All Students (The State of California Department of Education)

<http://www.closingtheachievementgap.org/cs/ctag/print/htdocs/home.htm>

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