



A Meta-Analysis Designed to Identify the Factors that Most Reliably Reduce the Achievement Gap

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Abstract

For five decades, one of the most enduring debates in education has been on how to close the achievement gap between white students on the one hand and black and Hispanic students on the other [1] [2]. This scholastic gap exists in virtually every measure of educational progress, including, GPA, standardized tests, the dropout rate, and the extent to which students are left back a grade [3] [4] [5]. Olneck (2005) notes that by the "eighth grade" the achievement gap is usually "about two years." [6] Equality is one of the most valued principles of the Western world. Consequently, Americans and Europeans do not feel at ease when unequal results emerge, and social scientists have frequently tried to reduce those inequalities. Ronald Roach (2001, p. 377) recently asserted that, "in the academic and think tank world, pondering achievement gap remedies takes center stage." [7]

A meta-analysis was undertaken to determine the factors that are most related with reducing the achievement gap. The meta-analysis included 30 studies that examined attempts to bridge the achievement gap between white students on the one hand and black and Latino students on the other. The results indicate that several factors are associated with a reduced achievement gap that could help bridge the gap. A number of these factors go beyond the bounds of the school. These findings suggest that social scientists may need a broad and multi-disciplinary approach to the achievement gap, in which they consider a variety of factors can potentially reduce the gap. In addition, the results suggest that social scientist may consider combining educational, psychological, and sociological factors in order to develop a more comprehensive approach to narrowing the achievement gap. The significance of these results is discussed, including significant ramifications for the future of education.

Theoretical Framework And Two Research Questions

Each of the disciplines mentioned above contributes a competing theoretical framework that in essence asks the following question. That is, is the resolution to the achievement gap best defined primarily as having a psychological, sociological, family-based, faith-based, or educational solution? Two research questions rest at the heart of the meta-analysis included in this paper. And they relate to the competing theoretical frameworks that each of these disciplines provide. The first research question seeks to address the issue of whether efforts to reduce or remedy the racial achievement gap, that are inextricably related to the competing theoretical frameworks inherent in these disciplines, are actually successful. Second, the programs are divided into certain types, based on the types of effort to reduce the racial gap defined in the theoretical framework presented above. The second research question therefore attempts to address the issue of what factors have the greatest relationship with a reduced achievement gap.

Methods

Data Collection Method (Coding and Rater Reliability)

In order to obtain the studies used in the meta-analysis, a search was undertaken to locate the relevant studies on the achievement gap. The first procedures to be used to locate these studies involved a computer search using 60 research databases to find studies examining how to reduce the achievement gap between black and Latino students on the one hand and white students on the other. This search produced 30 studies are included in the analysis.

Statistical Methods and the Effect Size Statistic

Effect sizes were computed from data in such forms as t tests, F tests, p levels, frequencies, and r-values via conversion formulas. When results were not significant, studies sometimes reported only a



significance level. In the unusual case that the direction of these not significant results was not available, the effect size were calculated to be zero.

Two researchers coded the studies independently for quality, the presence of randomization, and whether the definitional criteria the achievement gap are met. Study quality and the use of random samples will be graded on a 0 (lowest) to 3 (highest) scale.

Results

All but five of the effect sizes were in the .00 to .40 range. Therefore, the distribution of effect sizes was within a narrow range, but the effect sizes tended to be rather small. There were, however, a fair number of studies with larger effect sizes. There were also an ample number of attempts to reduce the achievement gap using various age groups, beginning as young as pre-school.

Research Question #1: Are Efforts to Initiate Programs or Identify Factors to Reduce the Achievement Gap Generally Successful?

The results of the analysis of the studies addressing variables that potentially reduce the achievement gap indicated that the effect sizes for the overall reduction of the gap were all in the expected direction, but none of them were statistically significant. The effect size for all student of all ages was .11, $p > .05$. The effect size for older (secondary school) students was .13, $p > .05$, which was larger than what it was for younger (pre-school and elementary schools) .02, $p > .05$.

Analyses were also done limiting the analysis to those studies of high quality (ranked 2 or 3 on a 0-3 scale) and those rated 1-3. For the analysis that limited the study to those studies rated 2-3, the effect sizes were slightly larger than in the initial analysis, but all the results nevertheless did not reach statistical significance.

Research Question #2: Are there Specific Factors Possibly Associated with Reducing the Achievement Gap?

Another group of analyses involved a meta-analysis of those studies examining the relationship between a variety of factors and a reduction of the achievement gap. The results indicate that some of the factors included in the meta-analysis were associated with a reduction of the achievement gap and others were not. Among those factors that were related to a reduction in the achievement gap were Family Factors, Curriculum, Religious Faith, and Religiously Oriented Schools. Other factors did not yield statistically significant results. They included: Classroom Structure, High Expectations (by Teachers), Cultural Factors, and Government Policy. Government Policy, in fact, had a negative relationship with bridging the achievement gap, although the result did not reach statistical significance. It should be noted that other studies included factors that are not included in this aspect of the meta-analysis, because there were not enough studies to conduct a meta-analysis. Generally, those factors not included in this analysis had a negative relationship with reducing the achievement gap.

When one examines these specific factors, one finds that the following: The Overall Effect Sizes for Reduction in the Racial Achievement Gap were .22, $p < .01$, for Family Factors, .35, $p < .05$, for Religious Faith, .22, $p < .05$ for Curriculum, and .16, $p < .05$, for Religious Schools. Of all the variables under study for their relationship with reducing the achievement gap, religious faith had the highest effect size for reducing the achievement gap.

Test of Homogeneity

The meta-analysis also involved undertaking tests of homogeneity for these different attempts at reducing the achievement gap. The findings indicated that the studies were relatively heterogeneous, as one might expect given the diverse nature of the variables ($X^2=44.15$, $p < .05$).

Discussion

Research Questions #1 and #2



The findings suggest that the efforts and variables examined fall short of what one would want to see in terms of a strong relationship with the achievement gap. Nevertheless, the results suggest that initiatives from several different approaches *combined* may well reduce the school outcome gap.

The findings of the meta-analyses for the second question were more encouraging than those that emerged from addressing the first question. The results of this second set of analysis indicate that there are certain factors that are associated with a reduction of the achievement gap. And given that a meta-analysis summarizes the entire body of research on a given topic, the message that seems to be that if schools and society at large would refocus their attempts to bridge the gap and concentrate their efforts drawing from factors that studies indicate actually work, it would appear to follow that the scholastic gap will narrow to a far greater degree than by trying approaches that generally do not work as well.

The results suggest that variable that yielded the highest effect sizes was personal religious faith among Latinos and blacks. The .35, $p < .05$, effect size is large enough so that parents, educators, and community leaders might want to view it as a viable factor that one can draw from as a tool to reduce the achievement gap. This is particularly interesting because few people in society and particularly the schools view the personal faith of their students of color as a source of strength for these individuals. Rather, surveys indicate that teachers at large often act to discourage personal faith either by ignorance, personal bias, or the unwillingness to even address faith and religion [8] [9] [10]

Zambrana & Zoppi (2002) assert that it is important for Western and other leaders and educators draw from the cultural strengths of people of color in order for the achievement gap to be narrowed [11]. It would appear that religious faith is quite possibly among these. This meta-analysis, however, not only presents evidence that government efforts in this area, albeit well meaning, appear to be ineffectual; but that thinking of a broad range of solutions may be the best way to the achievement gap. That is, rather than think of the achievement gap merely in educational terms, one should conceive solutions to the achievement gap as coming from a variety of social forces that working together (Jeynes, [12] [13] [14] [15]).

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