

# A Meta-Analysis on the Factors That Best Reduce the Achievement Gap

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## **Abstract**

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 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 multidisciplinary 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 to develop a more comprehensive approach to narrowing the achievement gap. The significance of these results is discussed.

## **Keywords**

achievement gap, meta-analysis, African American, Latino, education, urban education

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## Review of the Literature

### *Background of the Problem*

For five decades, one of the most enduring debates in education has been on how to close the achievement gap between White students on one hand and Black and Hispanic students on the other (S. R. Green, 2001; Simpson, 1981). This scholastic gap exists in virtually every measure of educational progress including, grade point average (GPA), standardized tests, the drop-out rate, and the extent to which students are left back a grade (Jeynes, 2008b, 2008c; L. R. Green, Blasik, Hartshorn, & Shatten-Jones, 2000; Olneck, 2005). Olneck (2005) notes that by the "eighth grade," the achievement gap is usually "about two years" (p. 95). Equality is one of the founding principles of the United States. Consequently, Americans do not feel at ease when unequal results emerge, and American social scientists have frequently tried to reduce those inequalities (Evans, 2005; Haycock, 2001).

The intractable nature of the difference in academic outcomes that exists between students of certain races of color and White students has been of considerable concern to educators and the American public (Rippeyoung, 2009; Roscigno, 1998). Ronald Roach (2001) recently asserted that, "in the academic and think tank world, pondering achievement gap remedies takes center stage" (p. 377). In addition, Kozol (1991) and other researchers assert that low-socioeconomic status (SES) youth and children of color are the most crucial for the U.S. educational system to reach (Michael, Farquhar, Wiggins, & Green, 2008). Research has also confirmed the existence of a SES gap, which although it is not the focus of this study, is related to the racial achievement gap and is also a topic of great concern. Technically, the socioeconomic achievement gap is as much a reality as the racial achievement gap. But researchers have probably tried to address racial inequality more than any other (Haycock, 2001; Orfield et al., 2000).

Because of the persistence of the racial gap, the government has launched a countless number of initiatives designed to eliminate it (Jeynes, 2008a; Evans, 2005; L. R. Green et al., 2000). These initiatives include Head Start, the school lunch program, President Clinton's national standards program, a host of affirmative action programs, No Child Left Behind, and various other programs. In addition, private organizations such as research institutes, foundations, and other organizations have initiated copious programs (G. L. Cohen, Garcia, Apfel, & Master, 2006; S. Lee, 2009; Navarro & Natalicio, 1999; Ross, Smith, & Casey, 1999; Slavin & Madden, 2001). These efforts have focused on multicultural teaching, attempting to raise students' self-esteem, parental involvement, requiring school uniforms, community partnerships, and other initiatives (Jeynes, 2003a, 2005, 2007b, 2008a; McFadden, 2009; Slavin & Madden, 2006).

Although social scientists acknowledge that an achievement gap exists, they differ widely in their suggestions about how to bridge the gap and it remains immutably wide even to this day (Jeynes, 2011; Cross & Slater, 1995; Dunham & Wilson, 2007; Haycock, 2001; McKenzie, 2008; Orfield et al., 2000). Because of the stubborn nature of the gap, various researchers have become more creative about the possible means to alleviating this gap (S. R. Green, 2001; Haycock & Jerald, 2002; Jerald & Haycock, 2002).

### ***Theoretical Framework: General Approaches to Reducing the Achievement Gap***

Social scientists, politicians, educators, and community leaders have undertaken a number of approaches to addressing the achievement gap. The fact that these people have approached the issue from such a wide number of diverse vantage points is indicative of the intensity with which Americans have addressed this issue, but also of the lack of consensus that exists regarding how best to resolve these differences in educational outcomes.

***Economic solutions.*** Some social scientists aver that the racial achievement gap is at its very heart a socioeconomic phenomenon and therefore must have financial solutions (Chideya, 1995; Rothstein, 2004). The belief that the achievement gap is essentially an economic phenomenon and therefore logically must have a monetary solution is certainly ostensibly logical. The perspective that the gap is economic in nature is buttressed by the fact that not only has the racial achievement gap persisted over time, but concurrent to this, there has also been a socioeconomic achievement gap (Jeynes, 1999, 2003b). Proponents of this perspective contend that if one wants to bridge the gap then the key is providing schools and families with the economic resources that they need to excel at high levels. These advocates assert that if one equalizes school funding, so that each school spends nearly exactly the same amount per student as others, the achievement gap will naturally contract (Hedges & Nowell, 1999; Rothstein, 2004). Moreover, theorists from this perspective also argue that the government should do all that it can to provide for the economic needs of the impoverished to make their lifestyle more in line with the average middle class American lifestyle (Chideya, 1995; Rothstein, 2004).

***Cultural and learning style solutions.*** A second group of theorists posits that a major reason why the racial achievement gap exists is because the American schooling system needs to demonstrate a greater degree of cultural sensitivity and awareness of the fact that different children have distinct learning styles

(Banks & Banks, 1995; Bernak et al, 2005). These individuals assert that contemporary American schooling is geared toward teaching Caucasian students. Given that the United States has undergone significant demographic change, a number of multicultural educators, in particular, believe that American schools need to appropriately adjust to these changes and alter their curriculum accordingly. Scholars who study the instruction of students of color claim that the present American system not only is geared toward Caucasians but also go beyond this to assert that American culture communicates to males of color that education is a “female thing” and a “white thing” (Ogbu, 1992, 1993).

*School-based versus individual solutions.* One of the most intriguing aspects of the debate regarding how to alleviate the racial achievement gap is whether the best solutions reside at the school level or at the individual level. Seemingly, there are reasonable arguments on both sides. Those who advocate school-based solutions rather than individual ones point to the fact that it is important for as many children as possible to benefit from any concerted attempt to reduce the achievement gap (Gregory, Nygreen, & Moran, 2006; Harvey, 2008). Three factors have caused an increasing number of social scientists to examine influences beyond the school as means of eradicating the achievement gap. First, research has consistently indicated that variables outside the school, particularly in the family, have a greater impact on educational outcomes than school-based variables (Coleman, 1966; Moynihan, 1989). Second, increasingly social scientists in fields of sociology, psychology, and educational psychology are evaluating the gap and are demonstrating an interest in examining possible individual level factors that could potentially reduce the achievement gap, for example, religious faith (Holman & Harding, 1996; Mentzer, 1988; Miller & Olson, 1988) Third, some urban theorists and researchers, especially, believe that the current body of research literature is decidedly too negative (Corbett, Wilson, & William, 2002). They argue that a plethora of studies focus on what minority and low income students are often unable to do, rather than examining those who flourish who are from these groups (Corbett et al., 2002). Moreover, they opine that by specifically singling out some of the personal qualities and sources of strength that these students have, it will provide insight to enable a greater number of these students to succeed, including faith- and family-based variables.

*The value of a meta-analysis in helping to reduce the achievement gap.* Given the breadth of potential solutions that theorists have propounded, it appears that to quantitatively synthesize these results to present an overall picture of what the body of research indicates would be providential. To most completely

identify the potential solutions to the presence of an achievement gap as well as examine the quantitative analysis presented in this article, it is vital that one examine each of these primary solutions. Given the salience of this issue, a meta-analysis appears a vital undertaking as a means of resolving which strategies are the best for narrowing this gap.

Over the last 45 years, there has been a considerable amount of research undertaken on reducing the achievement gap. In spite of all this research, there is a patent lack of consensus about what strategies Americans at various levels should undertake to see the gap abate. There are a number of reasons for this fact. First, scholars have propounded a large number of theories to explain why the gaps exist and how to best alleviate them. There has also been a prodigious degree of research initiated to provide insight into the interaction of these educational issues and how to best address them (Jeynes, 1999, 2003; S. R. Green, 2001). The result has been a body of research literature that can often seem overwhelming and difficult to fully digest and sort through. Many social scientists find it challenging to draw conclusions about what the overall body of research indicates, when it is so vast and various theorists and researchers are sometimes in disagreement with each other (Haycock, 2001; Hedges & Nowell, 1999). Second, most social scientists active in attempting to address the achievement gap are focused on a relatively specialized list of solutions that tend to match their area of expertise (Lang, 2000; Ogbu, 1992, 1993). In other words, educators tend to emphasize school-based solutions, psychologists tend to emphasize individual-based (and to some extent school-based) answers, family scientists (in psychology, sociology, and social work) tend to focus on family solutions, and sociologists tend to address societal solutions (Cooper & Jordan, 2005; Greenleaf, Brown & Litman, 2004; Hicks, 2004). Moreover, even within each of these disciplines researchers and theorists tend to examine a specific set of variables that could potentially reduce the gap (S. R. Green, 2001). Clearly this degree of specialization is only natural within academia. The ramifications of this degree of focus tends to be that social scientists are often most appreciative of potential solutions within their given field, but are not fully cognizant of the merit of remedies outside of their area. Third, as much debate as has transpired about the achievement gap, the bulk of literature has been in the form of hypothesizing, commentary, theorizing, or qualitative research. Considering the extent of the debate that has taken place over the achievement gap, the amount of quantitative research, at least comparatively speaking, has been rather small. The reality of the matter is that quantitative studies are important if one is to come to any definitive conclusions about reducing that outcome gap.

Accordingly, it is apparent that undertaking a meta-analysis would have an ameliorative impact on the achievement gap debate. A meta-analysis

statistically combines all the relevant existing studies on a given subject to determine the aggregated results of said research. Meta-analyses are generally the single most popular type of academic article, because they enable people to grasp what the overall body of research on a given topic indicates. A meta-analysis would enable social scientists to conclude which approaches to alleviating the achievement gap would be the most efficacious and productive. The educational gap is one of the most vital issues facing the nation and therefore it is imperative that the debate about this topic transcend the theoretical and disparate sets of numerical analyses and mature into a dialogue based on quantitative analysis of the various and sundry approaches that social scientists have tried to reduce the gap. Undertaking a meta-analysis will help maximize efforts to reduce the educational gap for generations to come.

### *Two Research Questions*

The meta-analysis included in this article will seek to address two research questions. The first research question seeks to address the issue of whether efforts to reduce or remedy the racial achievement gap are 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.

## **Method**

### *Research Methods and Data Analysis Plan for the Meta-Analysis on the Achievement Gap*

*Analytical approach.* This meta-analysis examined the relationship between factors that various programs have utilized to intervene to reduce the racial achievement gap, on one hand, and the size reduction (if any) of the achievement gap on the other. Two research questions were addressed. The first analysis (Research Question 1) examined whether efforts to reduce the education gap were generally associated with a successful reduction in the gap. The second analysis (Research Question 2) included determining whether there were specific factors possibly associated with reducing the achievement gap.

The procedures employed to conduct the meta-analysis are outlined under this heading (Analytical Approach) and the following headings below: Data Collection Method, Statistical Methods, Study Quality Rating, and Effect Size Statistics, and Defining of Variables.

Each study included in this meta-analysis will meet the following criteria:

1. It needed to examine the achievement gap and the specific independent variables in a way that could be conceptually and statistically distinguished from other primary variables under consideration. For example, if a researcher implemented a program that involved nine key features, including an attempt to decrease the achievement gap and the influence of the nine features could not be statistically isolated from the other features; the study was not included in the analysis.
2. It needed to include a sufficient amount of statistical information to determine effect sizes. That is, a study needed to contain enough information so that test statistics, such as those resulting from a t test, analysis of variance, and so forth, were either provided in the study or could be determined from the means and measures of variance listed in the study.
3. If the study used a control group, it had to qualify as a true control group and therefore be a fair and accurate means of comparison. Moreover, if the research utilized a control group at sometimes but not others, only the former comparisons were included in the meta-analysis.
4. The study could be a published or unpublished study. This was to reduce the likelihood of publication bias.

Due to the nature of the criteria listed above, qualitative studies were not included in the analysis. Although qualitative studies are definitely valuable, they are difficult to code for quantitative purposes and any attempt to do so might bias the results of the meta-analysis.

*Data collection method (coding and rater reliability).* 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 that used 60 research databases (e.g., Psych Info., ERIC, Dissertation Abstracts International, Wilson Periodicals, Sociological Abstracts, and so forth) to find studies examining how to reduce the achievement gap between African American and Latino students on one hand and White students on the other (see Appendix Table A1). The search terms included *achievement gap*, *achievement*, *African American*, *minority*, *raising achievement*, *students of color*, *socioeconomic urban schools*, *urban education*, and many other similar terms. Reference sections from journal articles on the achievement gap were also examined to find additional research articles. Emails were also sent to each of the Education department chairs of more than one hundred Research 1 universities in the United States asking

them whether there were any faculty in their department who had either recently completed or was just about to complete a study examining the reducing of the achievement gap. A total of 53 studies were obtained that addressed the relationship under study and found 30 studies that had a sufficient degree of quantitative data to include in this meta-analysis. Among the 30 studies that possessed a sufficient degree of quantitative data to include in this meta-analysis regarding factors that reduce the achievement gap, the total number of subjects was more than 1,075,000. The vast majority of studies examined more than one variable and its relationship with the achievement gap.

A number of different characteristics of each study were included for use in this study. These characteristics included (a) report characteristics, (b) sample characteristics, (c) intervention type, (d) the research design, (e) the grade level or age of the students, (f) the outcome and predictor variables, (g) the attrition rate, and (h) the estimate of the relationship between various independent variables and a reduction in the achievement gap.

*Report characteristics.* Each study entry began with the name of the author of the study. Then the year the study was recorded, followed by the type of research report. Research reports were defined either as a journal article, book, book chapter, dissertation, master's thesis, government, school or private report, conference paper, or other type of report.

*Sample characteristics.* These included the number of students sampled, their locations, and how they were selected, for example, via random selection, stratified random selection, or advertisement.

*Intervention type.* The experimental or procedural manipulation used, if any, was recorded to determine the effects of the various factors employed on the achievement gap.

*Research design.* The studies in this meta-analysis were categorized into three basic types of designs. First, it will be noted the studies that employed some type of manipulations to assess the effects of reducing the achievement gap.

The second type of design included studies that took cross-sectional measures of the achievement gap without utilizing any type of manipulation. The third type of design involved the calculation of a correlation coefficient between the variables used to reduce the achievement gap and the extent that the achievement gap was reduced.

For studies that used a manipulation of a variable to reduce the achievement gap the following was recorded: (a) the length, frequency, duration,



and total number of training sessions; (b) the method of training (workshop, individual meetings, phone calls, videotape, email communication, newsletter); (c) the type of behavioral or achievement-related outcome measure (e.g., standardized achievement test, nonstandardized achievement test, or class grades); (d) the unit of analysis (individual student or classroom) at which the effect size was calculated; and (e) the magnitude of the relationship between the factors used to reduce the achievement gap and the achievement gap.

For the cross-sectional studies and correlation studies, if it was available, the following will also be recorded: (a) the SES of participants in the sample and (b) the types of behavioral and academic measures that were used.

*The grade level or age of the students* was coded, including means and standard deviations when they were available.

*The outcome and predictor variables* from each study were coded to include the different ways that the achievement gap was measured.

**Attrition rate.** When available, the attrition rate of each study was coded.

The estimate of the relationship between factors designed to reduce the achievement gap and the size of the achievement gap: The process of the effect size estimation is described in the next section.

**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 provided by Glass, McGaw, and Smith (1981). When results were not significant, studies sometimes reported only a significance level. In the unusual case that the direction of these nonsignificant results was not available, the effect sizes were calculated to be 0.

For studies with manipulations the standardized mean difference was used to estimate the effect of various factors on the achievement gap. The  $d$ -index (J. Cohen, 1988) is a scale-free measure of the separation between two group means. Calculating the  $d$ -index for any comparison involves dividing the difference between the two group means by either their average standard deviation or by the standard deviation of the control group. In the meta-analysis, I subtracted the experimental group mean from the control group mean and divided the difference by their average standard deviation. Hence, positive effect sizes indicated that various factors were successful in reducing the achievement gap. As a supplement to these analyses, the Hedges's (1981)  $g$  measure of effect size was used. Because it employed the pooled standard deviation in the denominator, it customarily provided a more conservative estimate of effect size. Hedges also provides a correction factor that helps to adjust for the impact of small samples.

For studies that involved cross-sectional measures of the effects of certain factors on the achievement gap, the following procedures were undertaken. For those studies that attempt to statistically equate students on other variables, the preferred measure of relationship strength was the standardized beta-weight,  $\beta$ . These parameters were determined from the output of multiple regression analyses. If beta-weights could not be obtained from study reports, the most similar measures of effect (e.g., unstandardized regression weights) were retrieved.

For studies that involved cross-sectional measures but included no attempt to statistically equate students on third variables, results from the  $t$  tests,  $F$  tests, and correlation studies provided by the researchers were used in the study. Probability values were used as a basis for computation only if the researchers did not supply any of information on the test statistics just mentioned.

*Calculating average effect sizes.* Two sets of statistical procedures were also used to distinguish between those analyses that included sophisticated controls (SES, race, gender, or previous achievement) and those studies that did not. The results of these procedures are listed in different columns in the Results section, with the degree of statistical significance and 95% confidence intervals (CI) listed for each. An overall effect size was then determined, combining the studies that did and did not use sophisticated controls. No analyses of statistical significance were completed on the combined effect sizes, given the different structure of the studies involved. A weighting procedure was used to calculate average effect sizes across all the comparisons. First, each independent effect size was first multiplied by the inverse of its variance. The sum of these products was then divided by the sum of the inverses. Then, 95% CI were calculated. As Hedges and Vevea (1998) recommend, all the analyses were conducted using fixed-error assumptions in one analysis and applied random-error assumptions in the other.

If there was more than one effect size presented in the "Results" section, the effect size that was chosen was based on that which referred to (a) the overall sample and (b) the purest measure of the achievement gap, as determined by the raters. In the case of results that included clear statistical outliers, the presence of these outliers was acknowledged and then supplemental analyses were run without such an outlier to estimate the degree to which the presence of an outlier might have affected the results.

Two sets of statistical procedures were also used to distinguish between those analyses that included sophisticated controls (SES, race, gender, or previous achievement) and those studies that did not. The results of these procedures are listed in different columns in the "Results" section, with the degree

of statistical significance and 95% CI listed for each. An overall effect size was then determined, combining the studies that did and did not use sophisticated controls.

Tests of homogeneity were completed on the achievement gap reduction programs to gain a sense of the consistency of specific achievement gap reducing measures across studies.

Analyses were also undertaken to address a variety of important questions that could provide social scientists with more insight into the relationship between efforts to reduce the achievement gap and the effects that these variables had on the achievement gap: (a) the effect sizes for efforts to reduce the achievement gap using both standardized and nonstandardized academic measures and (b) the effect sizes for reducing the achievement gap for both the elementary and secondary school level.

*Study quality rating.* Two researchers coded the studies independently for quality, the presence of randomization, and whether the definitional criteria the achievement gap were met. Study quality and the use of random samples were graded on a 0 (*lowest*) to 3 (*highest*) scale. Quality was determined using the following:

(a) Did it use randomization of assignment? (b) Did it avoid mono-method bias? (c) Did it avoid mono-operation bias? (d) Did it avoid selection bias? (e) Did it use a specific definition of the achievement gap?

We calculated interrater reliability by computing percentage of agreement on the definition of the achievement gap and the factors used to reduce that gap, issues of randomization, and quality of the study. Interrater reliability was 100% on whether a study examined the achievement gap, 96% for the specific factors examined in reducing that gap in a given study, and 91% for the quality of the study. For the specific components of quality, interrater agreement percentages were 91% for randomization, 97% for avoiding mono-method bias, 93% for avoiding mono-operation bias, 91% for avoiding selection bias, and 97% for using a specific definition of the achievement gap.

A supplementary analysis was done to include only those studies with quality ratings of 2-3 and 1-3.

### *Defining of variables*

*Independent variable. Achievement gap*—For the purposes of this study, the achievement gap was defined as the difference in academic achievement that exists between the average White student and the average African American and/or Latino student.

*Outcome measures and issues*—(a) Did certain character traits evident in either students or the parents reduce the achievement gap? (b) Did parental

dedication to the family reduce student achievement gaps? (c) Did student diligence reduce the achievement gap? (d) Was student religious faith associated with a reduction in the achievement gap?

**Research Question 1:** Were efforts to initiate programs or identify factors to reduce the achievement gap generally successful?

The first research question addressed the overall effect sizes for the studies that examined the variables that were designed to have an impact on the overall reduction of the racial achievement gaps. In other words, of all the studies that were done that were examined in this meta-analysis that include studies that were designed to examine attempts to reduce in the achievement gap, can one say that they were associated with an overall reduction of the achievement gap to a statistically significant degree?

**Research Question 2:** Were there specific factors possibly associated with the reduction of the achievement gap?

The second research question addressed the effect sizes for the studies that examined the variables that were designed to have an impact on reducing these achievement gaps, with a focus on identifying the factors most greatly related to reducing that gap. That is, of all the studies that are examined in this meta-analysis that include studies that were designed to examine attempts to reduce the racial achievement gap, which variables were associated with a greatest reduction in the gap?

## Results

The results presented here used analyses based on random-error assumptions. The rationale for presenting these results rather than those using fixed-error assumptions is to utilize analyses that yielded more conservative effect sizes. As one would expect, the analyses based on fixed-error assumptions yielded somewhat larger effect sizes.

Table 1 lists the studies included in the meta-analyses, including information regarding sample size, the effect size, output variables, and other relevant characteristics of each included study. One trend among the studies is that there are not too many obvious outliers in terms of effect sizes, which kept the variance relatively low. All but five of the effect sizes were in the .00 to .40 range, although there were a large number (nearly 40%) of studies with effect sizes of .00 to .10. Therefore, the distribution of effect sizes was within a narrow range, but the effect sizes tended to be rather small. There were,

**Table 1.** Studies Included in the Meta-Analysis Listed by Author, Year of Study, Type of Document, Sample Size, and a Variety of Other Characteristics.

Study and year	Type of document	Sample size	Sample characteristics	Grade or age of students	Intervention	Outcome variable	Covariates	Effect size
Byfield (2008)	Journal article	40	High achievers	High school and college 12th grades	Not applicable	Grade point average (GPA)	None	.67
V. E. Lee and Stewart (1989)	Journal article	10,187	Nationwide data set of randomly selected students	12th grade	No intervention, only achievement and intelligence tests given	A variety of education measures	Variety of factors	.66
G. L. Cohen, Garcia, Apiel, and Master (2006)	Journal article	243	Nearly equal number of African American and White students	7th grade	Character education curriculum	Fall grades	None	.44
Dunham and Wilson (2007)	Journal article	5,993	Nationwide data set of randomly selected students	10th and 12th grade	Not applicable	Dropping out of school	Race and different family factors	.40
Jeynes (1999)	Journal article	24,599	Nationwide data set of randomly selected students	12th grade	No intervention, only an examinations given and other educational data gathered	Various measures of academic achievement, especially standardized measures	Race, gender, socioeconomic status	.40 overall
Keith and Page (1985)	Journal article	3,922	Nationwide data set of randomly selected students	10th and 12th grade	Not applicable	Reading and math achievement tests	Variety of factors in three different models	.39
Jeynes (2001)	Journal article	20,706	Nationwide data set of randomly selected students	12th grade	No intervention, only an examinations given and other educational data gathered	Various measures of academic achievement, especially standardized measures	Race, gender, socioeconomic status	.33-.40 depending on the model used
Trent (1997)	Journal article	3,927	St. Louis Public School students	5th and 8th grade	School characteristics	Stanford Achievement Test	None	.30
Borman et al. (2005)	Journal article	3,290	Children enrolled in Success for All	K-4th grade	Success for All interventions	Various measures of reading achievement	None	.27 overall
L. R. Green, Blasik, Hartshorn, and Shatten-Jones (2000)	Journal article	1,213	African Americans	8th-12th grade	A more demanding curriculum	Science achievement and achievement generally	None	.25

(continued)

Table 1. (continued)

Study and year	Type of document	Sample size	Sample characteristics	Grade or age of students	Intervention	Outcome variable	Covariates	Effect size
V. E. Lee (1985)	Dissertation	3,933	Catholic school and public school students	10th and 12th grade	Not applicable	A variety of academic measures	Variety of factors	.25
Stevens, Olivarez, and Hamman (2006)	Journal article	666	Texas school	4th-10th grade, but mostly 8th grade	Not applicable	Mathematics achievement test	Variety of factors	.23
Rosigno (1998)	Journal article	1,058	Nationwide data set of randomly selected students	10th grade	Not applicable	Math and reading achievement tests	Variety of factors	.05-.34 depending on variable and subject matter
Johnson-Webb (2004)	Journal article	491,197 youth, including 12,623 Latinos	From an Ohio state sample of youth	Youth who had finished the 9th grade	Not applicable	Advancement in following school grade	Variety of factors	.18
V. E. Lee (1986)	Conference presentation	30,000	Nationwide data set of randomly selected students	10th and 12th grade	Not applicable	Math achievement test	At times none and at times a limited number of factors	.18
Henderson (1975)	Journal article	2,743	Examined highly segregated schools	5th grade	School climate	Educational measures	Small number of other variables	Varied from .10-.22 depending on the variable examined
Rein (2004)	Master's thesis	260	Students from two schools of approximately 1,500 students each	9th grade	School structure	Proficiency tests	None	.15

(continued)

**Table 1. (continued)**

Study and year	Type of document	Sample size	Sample characteristics	Grade or age of students	Intervention	Outcome variable	Covariates	Effect size
Rumberger and Willms (1992)	Journal article	6 largest CA school districts, sample size varied	6 largest CA school districts	9th-12th grade	Compared outcomes based on whether there were government interventions	Achievement tests	None	.10
Brody, Stoneman & Flor (1996)	Journal article	90	Recruited population	9- to 12-year-old students	No intervention	Grades	None	.09
Porfeli, Wang, Audette, McCol, and Alogozzine (2009)	Journal article	55,394	Students from of the largest districts	K-5th grade	Not applicable	End of year grades and tests	Variety of factors	.06
Simpson (1981)	Journal article	334	Students were from the San Francisco area	3rd grade	Classroom organization	Teacher ratings of math, reading, and social studies	Variety of factors	.06
Williams (1982)	Journal article	30,000	Nationwide data set of randomly selected students	10th grade	No intervention	Reading and math tests	Several factors	.05
Ross, Smith & Casey (1999)	Journal article	256	Children enrolled in Success for All	2nd-4th grade	Not applicable	A variety of academic measures, particularly reading measures	None	.05
Rippeyoung (2009)	Journal article	9,894 out of an original sample of 10,688	Preschool students	Preschool grade	Not applicable	A variety of preschool measures	None	.05
Hoffer (1998)	Journal article	24,599	Nationwide data set of randomly selected students	9th-12th grade	No intervention, only an examinations given and other educational data gathered	Various measures of academic achievement, especially standardized measures	Race, gender, socioeconomic status	.04
Sebring and Camburn (1992)	Journal article	25,000	Nationwide data set of randomly selected students	8th grade	No intervention	Standardized tests results	Variety of factors	.04

(continued)

Table 1. (continued)

Study and year	Type of document	Sample size	Sample characteristics	Grade or age of students	Intervention	Outcome variable	Covariates	Effect size
Borman & Hewes (2002)	Journal article	1,310 after attrition. Original sample size = 3,236	Children enrolled in Success for All	K-6th grade	Success for All interventions	Various measures of reading achievement	None	.00
Glenn (2006)	Journal article	150,000	Students effected by school financing models	4th and 8th grade	Compared outcomes based on whether there were government interventions	National Assessment of Educational Progress (NAEP) math and reading tests	None	-.02
Braun, Wang, Jenkins, and Weinbaum (2006)	Journal article	Sample size varied depending on measure	Schools in 10 states	8th grade	Compared outcomes based on whether there were government interventions	Various academic variables, e.g., test scores, drop-out rates.	None	-.06
J. Lee (1998)	Journal article	127,337	Students from two schools of approximately 1,500 students each	4th and 8th grade	Compared outcomes based on whether there were government interventions	National Assessment of Educational Progress (NAEP) tests	None	-.30



**Table 2.** Means for Measures Assessing the Quality of Study, Whether a Random Sample Was Used, Year of Study, and Sample Size for the 30 Studies Included in the Meta-Analysis.

	Mean	Standard deviation or percentage distribution	Range
Year of study	1997.9	2001+ = 13 1991-2000 = 11 1981-1990 = 5 1975-1980 = 1	1975-2009
Sample size	35,896	30,000+ = 7 20,000-29,999 = 4 10,000-19,999 = 2 0-9,999 = 17	40-491,197
Quality of study	2.17	3 = 14 2 = 8 1 = 7 0 = 1	0-3

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 preschool.

Table 2 summarizes the studies by average year of the study, sample size, quality of study, and the quality of the definition of reducing the achievement gap. The average year of the study was 1997.9, that is, between 1997 and 1998. Precisely 80% of the studies took place from 1991 and afterward. The average sample size was 35,896. Among the categories listed, the largest number of studies had a sample size of between 0 and 9,999. Although 57% of the studies included had sample sizes of 9,999 or below, there were a number of studies with samples in excess of 20,000, which had a substantial impact on the average sample size. Correlation analyses were undertaken to determine if there were any statistically significant relationships between the variables under study. There were no statistically significant relationships between effect size and study quality, year of the study, or randomization.

## Two Research Questions

**Research Question 1:** Are efforts to initiate programs or identify factors to reduce the achievement gap generally successful?

Table 3 presents data that address Research Question 1, that is, the overall effect sizes for the studies that examine the variables that are designed to

**Table 3.** Effect Sizes Programs Designed to Reduce the Achievement Gap With 95% Confidence Intervals in Parentheses ( $N = 30$  Studies).

Categories examined in addressing the efficacy of reducing the achievement gap	Overall effect size	Effect size for younger students <sup>a</sup>	Effect size for older students <sup>b</sup>
Overall effectiveness of programs designed to reduce the achievement gap			
All achievement measures	.11	.02	.13
Standardized achievement measures	.04	.00	.05
Nonstandardized achievement measures	.24* [.02, .46]	.09	.30** [.10, .50]
Quality of the study			
Includes those rated 2-3	.12	.03	.13
Includes those rated 1-3	.11	.02	.13

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ . \*\*\*\* $p < .0001$ .

have an impact on the overall reducing of these achievement gaps. That is, of all the studies that have been done that are examined in this meta-analysis that include studies that are designed to examine attempts to reduce the achievement gap, can one say that they are associated with an overall reduction of the achievement gap to a statistically significant degree? Table 3 lists the effects sizes in three columns, one indicating the overall effect sizes, that is, including all ages of children both younger (preschool through elementary school) and older (secondary school). The second and third columns present the effect sizes for younger and older students, respectively.

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 students of all ages was .11,  $p > .05$ , which was in the direction one would expect, but it is not statistically significant. The effect size for older (secondary school) students was .13,  $p > .05$ , which was larger than what it was for younger (preschool and elementary schools) .02,  $p > .05$ . Nevertheless, none of these effect sizes were statistically significant, although once again the effect sizes were in the expected direction.

Table 3 then lists the effect sizes for studies addressing variables that potentially reduce the achievement gap for standardized and nonstandardized achievement measures. For the standardized measures, once again, none of the effect sizes are statistically significant. For these assessments, the effect size was .04,  $p > .05$ , for younger and older students combined. It was .05,  $p > .05$  for older students and .00,  $p > .05$  for younger ones. For the nonstandardized measures, the effect size was .24,  $p < .05$ , 95% CI = [.02, .46], for younger and older students combined. It was .30,  $p < .01$ , 95% CI = [.10, .50],

**Table 4.** Effects Sizes for a Reduction in the Achievement Gap for Factors Differentiated in the Preliminary Meta-Analysis ( $N = 30$  Studies).

Variables examined in the reduction of the achievement gap	Overall effect size for reduction in the racial achievement gap	Effect size for reduction in the racial achievement gap without sophisticated controls	Effect size for reduction in the racial achievement gap with sophisticated controls
Classroom structure	.25	.25	NA
Cultural factors	.02	.02	NA
Curriculum	.22* [.02, .42]	.22* [.02, .42]	NA
Family factors	.22** [.08, .36]	.21* [.03, .39]	.23* [.04, .42]
Government policy	-.09	-.09	NA
High expectations in	.23	.23	NA
Religious faith	.35* [.05, .65]	.40* [.06, .74]	.30* [.04, .56]
Religiously oriented schools	.16* [.01, .31]	.20* [.02, .38]	.12

Note. NA = not applicable.

\* $p < .05$ . \*\* $p < .01$ .

for older students and  $.09, p > .05$  for younger ones. In other words, statistically significant results emerged for all students combined and for older students, but not for younger students specifically.

Overall, 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 fell short of statistical significance. The effect size for all students of all ages was  $.12, p > .05$ , which was in the direction one would expect, but it is not statistically significant. The effect size for older (secondary school) students was  $.13, p > .05$ , which was larger than what it was for younger (preschool and elementary schools)  $.03, p > .05$ .

**Research Question 2:** Are there specific factors possibly associated with reducing the achievement gap?

The final set of analyses involved a meta-analysis of those studies examining the relationship between a variety of factors and a reduction of the achievement gap. For each variable, Table 4 lists the overall effect size, the effect size for studies that did not include sophisticated controls, and the effect size for studies that did include sophisticated controls. Table 4 indicates 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 was not statistically significant. 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. It should be noted that those factors not included in this analysis generally had a negative relationship with reducing the achievement gap.

The overall effect sizes for Reduction in the Racial Achievement Gap were .22,  $p < .01$ , 95% CI = [.08, .36], for Family Factors; .35,  $p < .05$ , 95% CI = [.05, .65], for Religious Faith; .22,  $p < .05$ , 95% CI = [.02, .42], for Curriculum; and .16,  $p < .05$ , 95% CI = [.01, .31], 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. Some of the variables examined did produce a directional effect size, but did not reach statistical significance. Other effect sizes reached considerably higher numbers, when sophisticated controls were not used. For example, the effect size for religious faith without sophisticated controls was .40,  $p < .05$ , 95% CI = [.06, .74].

*Test of homogeneity.* Tests of homogeneity for these different attempts at reducing the achievement gap indicated that they were relatively heterogeneous, as one might expect given the diverse nature of the variables ( $\chi^2 = 44.15$ ,  $p < .05$ ).

## Discussion

The results of this meta-analysis present a number of interesting findings, especially in relation to the two primary research questions.

**Research Question 1:** Are efforts to initiate programs or identify factors to reduce the achievement gap generally successful?

The results indicate 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. Although the relationships between an overall achievement gap and the factors examined are in the direction that one would expect, neither the effect sizes that arose for younger children (preschool through elementary school) nor those that arose for older ones (secondary school) were statistically significant. Although most social scientists will find these results disappointing, they probably fairly accurately reflect the initiatives that have been made to reduce the

achievement gap over the last five decades. That is, although the attempts to bridge this gap have been generally well meaning and have been more aggressive than any other educational effort over the a similar time frame, the result has been that the gap has only been made marginally lower than it was before (Jeynes, 2010; Dunham & Wilson, 2007; McKenzie, 2008). Although there was some improvement in the educational gap during the late 1970s and even to a greater extent during the 1980s, after this period the gap even widened again to some degree (S. R. Green, 2001; Haycock & Jerald, 2002; Jerald & Haycock, 2002). In this sense, the results reflect that fact that efforts to reduce the gap may be less than desired, but may give people guidance regarding which approaches to eliminating the gap work better than others.

To be sure, one must be careful not to assign too simplistic a rubric to explain why the gap remains so intransigent. The reality is that research indicates that a gap exists due to wide variety of reasons. And indeed the findings attempting to address the second research question may provide some insight about the factors that are most important.

There is some encouraging news in the findings in that when one breaks down the data into standardized and nonstandardized findings, statistically significant results emerge for both the overall sample of students and for older, that is, secondary school findings, for nonstandardized assessments. With closer examination, one also notices that at all levels the absolute value of the effect sizes for reducing the achievement gap is greater at the secondary level than it is at the elementary school level. Although this trend reaches statistical significance only for nonstandardized tests and not for standardized tests, it is nevertheless worthy of note.

Two questions therefore emerge: (a) Why might it be easier to bridge the achievement gap that exists among nonstandardized measures rather among standardized measures? and (b) Why might the achievement gap narrow more among older (secondary school) students than younger (preschool and elementary school) students? The body of research suggests that there may be a few dynamics at work that might explain the first result. First, given that nonstandardized measures are just that, nonstandardized, and therefore more subject to teacher desires that they successfully reduce the achievement gap, nonstandardized measures such as teacher ratings might demonstrate a reduction in the gap that is larger than is commonly manifested on standardized assessments. Second, to whatever extent educators and parents tend to be more concerned with their children's grades and teacher impressions than they are test scores, it may be that they are most likely to develop efforts to reduce the gap that are more likely to be reflected in classroom assessments rather than in standardized test scores. Clearly these are only hypotheses as to why these differences between nonstandardized results exist and any possible difference between these two sets of results are worthy of further research.

The question also arises as to why the secondary school achievement gap appears to narrow more easily than the elementary one. Once again, there are a number of possibilities a few of which are mentioned here. First, the achievement gap tends to widen as students get older and it may well be that it is easier to reduce than gap when the gap is wider than it is narrower. Second, it may be that the factors that cause the achievement gap are easier to reverse when a child is older and is able to more easily fathom what is necessary to excel academically. Third, younger children may be more likely to have an external locus of control than are high school students who may feel more empowered to act on their environment to reverse what need not be. Once again, further research is needed to more fully investigate these possibilities.

**Research Question 2:** Are there specific factors possibly associated with reducing the achievement gap?

The results of the analyses for the second question were more encouraging than those that emerged from addressing the first question. In other words, although the results of the meta-analysis indicate that the attempts at reducing the achievement gap have been rather disappointing, 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, in this case the achievement gap, the message that seems to arise is 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 educational gap will narrow to a far greater extent than by trying approaches that generally do not work as well.

The results suggest that the variable that yielded the highest effect sizes was personal religious faith among Latinos and African Americans. 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. To the contrary, 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 (Jeynes, 1999, 2003a, 2010). Of course, it is inappropriate to proselytize in the public school forum, but it is even a greater infraction to undermine a child's faith and unfortunately, this is sometimes what takes place.

There is a certain degree of irony that at a time when East Asian countries such as Korea, China, Singapore, Taiwan, and Eastern Europe are looking to

faith as a major factor in contributing to the strength and prosperity of the United States and Western Europe in the 16th through 20th centuries, that the United States is quick to dismiss faith as having any real inherent value, especially when it comes to academic achievement (Jeynes, 2003b, 2008c).

Concurrent to these trends in the United States, East Asia is quickly positioning itself to replace the United States as the center of world Christianity (Micklethwait & Wooldridge, 2009). For the last three and a half decades, the world's largest church has resided in South Korea, the Yoido Full Gospel Church, which at its peak numbered a phenomenal 900,000 members with nine services each day that in each service could accommodate crowds of well over 50,000 people (Cho, 1989). In this decade, most social scientists expect that China will surpass the United States as having the most number of Christians (Micklethwait & Wooldridge, 2009). In these nations, there is a perception that Max Weber (1958) was correct about some of the advantages of Christianity in terms of self-discipline and academic accomplishments. Perhaps the results of this meta-analysis, coupled with the developments in the Far East, will cause social scientists to at least consider developing attitudes that are more tolerant of people of faith.

Religious-Oriented Schools also yielded a positive and statistically significant effect size,  $.16, p < .05$ . Nevertheless, one should note two findings that emerged from this meta-analysis. First, the effect size was statistically significant overall, but in terms of the two types of analyses addressed, the effect size was statistically significant for those analyses that did not use sophisticated controls such as SES, but fell shy of statistical significance when those sophisticated controls were utilized. Second, the effect sizes for Religious-Oriented Schools were not as robust as for the variable for Religious Faith. Religious Faith yielded statistically significant results for students when sophisticated controls were not utilized,  $.40, p < .05$ , and also when they were utilized  $.30, p < .05$ .

There are a number of reasons why religious commitment could help people of color excel educationally and reduce the achievement gap. The first of these reasons deals with a religious work ethic (Furnham, 1987; Gerhards, 1996; Giorgi & Marsh, 1990; Mudrack, 1992). A second reason why religious commitment could positively influence school measures stems from the finding of some studies that suggest that people of faith are more likely to have an internal locus of control, which is frequently related to doing well in school (Garner & Cole, 1986; Jackson & Coursey, 1988; Johnson, 1992). A third reason to think that there might be a correlation between religious commitment and academic outcomes emerges from the tendency for religious people to avoid behaviors that are typically regarded as undisciplined and harmful to educational achievement (Bahr, Hawks, & Wang, 1993; Nylander, Tung, & Xu, 1996).

The results of the meta-analysis indicate that there are other factors that work to reduce the achievement gap. These factors include family factors and changing the curriculum, both of which yielded effect sizes of .22 of a standard deviation. It is interesting to note that the effect size for family factors were very comparable when sophisticated controls were included on the analysis versus when they were not. In fact, although the differences between the two following sets of numbers were not statistically significant, it is important to note that effect sizes were actually larger for those studies that did include sophisticated controls .23,  $p < .05$ , versus those studies that did not include them .21,  $p < .05$  (e.g., SES).

The results should encourage people to think more broadly than in the past, when considering the best factors to employ to reduce the achievement gap. Over these last 45 or 50 years that the achievement gap has been the subject of such unparalleled attention, the vast majority of the initiatives have been government-based or school-based. During this period, the assumptions seemed to be that the best solutions to the achievement gap were inaugurating efforts that were focused on the school and on increased funding from the government. But this meta-analysis 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, often generated by the U.S. government, one should conceive solutions to the achievement gap as coming from a variety of social forces that working together (Jeynes, 1999, 2003b, 2005, 2007a).

Initially, the results of the meta-analysis might be surprising, because with the exception of curriculum the variables most closely associated with a reduction of the achievement gap may not be the first that would come to mind. But if one chooses to cogitate over the factors that were closely linked with the narrowing of the gap, the results become much more intuitive. In reality, it only makes sense that faith and family are so closely associated with the bridging of the achievement gap, because few social forces influence one's life more than faith and family factors. With this in mind, one can make an argument that any initial surprise should itself be a source of concern, because what it demonstrates is that there may be a disconnect between the ways that are commonly assumed to be the most effective at addressing the gap versus the social forces that may present humanity with the greatest potential of bridging the educational gap.

It seems logical that faith and family factors could have a notable influence in reducing the achievement gap. Because the factors have such a dramatic impact on multitudinous lives, it only seems reasonable to believe they could affect school outcomes as well. It particularly appears sensible because



surveys indicate that African Americans and Latinos are among those ethnic groups that are most likely to declare that their religious faith is important to them. At the present time, one could easily conclude that this society and public schools may actually discourage religious faith. To the extent that African Americans and Latinos are often religious, this may be a case of institutional racism.

### *Summarizing Thoughts*

The findings of this meta-analysis are humbling in one sense, because the results indicate just how far American society needs to go before it can claim to have successfully bridged the achievement gap. On the contrary, these findings are also thought provoking in that they invite people to consider the possibility that American society needs to think of the achievement gap much more broadly so that the citizenry view it as a sociological problem consisting of an array of social forces, rather than merely an educational challenge. After nearly five decades of attempts by educators and others to reduce the achievement gap, with only limited success, the fact that these factors that go beyond the school sphere, have a solid relationship with a reduction in the achievement gap may challenge Americans to have a more open-minded view toward addressing the achievement gap (Jeynes, 1999, 2003b). The fact that faith and family go beyond the educational sphere should encourage Americans to broaden their approach to the achievement gap, so that it includes the consideration of factors both within and beyond the schools (Michael et al., 2008). One can argue that one of the reasons why the presence of the achievement gap has been so persistent is because of the rather insular approach that many educators have taken toward the achievement gap, which have not incorporated sufficiently the strength that factors beyond the school confines can provide. The results of this study suggest that the religious faith of the students and family factors may be such a source of strength.

These results also appear to encourage an interdisciplinary approach to relieving the gap, in which individuals reach higher levels of cooperation to address this issue. From an educational policy standpoint, it may be that the most sagacious approach would be to address the issue comprehensively by concurrently employing a number of different strategies. Until now, most social scientists and policy makers have had a rather confined rubric for bridging the gap. It appears logical that a broader set of models that allows for the inclusion of several possibly ameliorative factors would work best. These findings indicate that it would appear to be wise to support policies that are supportive of strong families and personal religious faith.

## Limitations of Study

The primary limitation of this meta-analysis, or any meta-analysis, is that it is restricted to analyzing the existing body of literature. Therefore, even if the researcher conducting the quantitative integrations sees ways the studies included could have been improved, there is no way to implement those changes. A second limitation of a meta-analysis is that the social scientist is limited to addressing the same research questions addressed in the aggregated studies. For example, it would be advisable to have more emphasis on bridging the socioeconomic achievement gap that exists among Whites from all the studies included, but nearly all the studies focused much more on students of colors rather than White students. Consequently, one can only aggregate the existing results and cannot address issues of this nature.

## Appendix

**Table 1.** List of Search Engines Used in the Meta-Analysis.

Abstracts in Social Gerontology	E-journals	NetLibrary
Academic Search Complete	EBSCO E-journals	Newspapers
ACLS Humanities E-Book Project	EconLit	Oxford Journals Online
ACM Digital Library	Education Index Retrospective: 1929-1983	Oxford Reference Online
Alt-Press Watch	Education Line	Primary Search
American Indian Experience	ERIC	PsycARTICLES
Annual Reviews	Factiva	PsycINFO
Anthropology Plus	Family and Society Studies Worldwide	Public Administration Abstracts
AnthroSource	Handbook of Latin American Studies Online	Public Affairs Index
AP Images (formerly AccuNet)	Historical Abstracts	Rand California
Association Unlimited	Latino Literature	SAGE Premier Journals Online
ATLA Religion Database	Lexis Nexis Academic	Science Citation Index (SCI) see Web of Science
Black Studies Center	Library Literature and Information Science (H. W. Wilson)	Social Science Citation Index (SSCI), see Web of Science
Brill's New Jacoby Online	Library, Information Science and Technology Abstracts	Social Services Abstracts
Business Monitor Online	MAS Ultra-School Edition	SocINDEX
Chicano Database	MEDLINE (via OVID)	Sociological Abstracts
CINAHL Plus with Full Text	Military and Government Collection	SpringerLink Journals Online Collection
Communication and Mass Media Complete	Natural Standard Professional Database	SPORTDiscus
Dissertation Abstracts International	NetLibrary	Wiley InterScience (including Blackwell Synergy journals)
Dissertation and Theses	Newspapers	WorldCat

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