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THE TRUTH ABOUT BOYS AND GIRLS

By Sara Mead

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If you've been paying attention to the education news lately, you know that American boys are in crisis. After decades spent worrying about how schools "shortchange girls,"¹ the eyes of the nation's education commentariat are now fixed on how they shortchange boys. In 2006 alone, a *Newsweek* cover story, a major *New Republic* article, a long article in *Esquire*, a "Today" show segment, and numerous op-eds have informed the public that boys are falling behind girls in elementary and secondary school and are increasingly outnumbered on college campuses. A young man in Massachusetts filed a civil rights complaint with the U.S. Department of Education, arguing that his high school's homework and community service requirements discriminate against boys.² A growth industry of experts is advising educators and policymakers how to make schools more "boy friendly" in an effort to reverse this slide.

It's a compelling story that seizes public attention with its "man bites dog" characteristics. It touches on Americans' deepest insecurities, ambivalences, and fears about changing gender roles and the "battle of the sexes." It troubles not only parents of boys, who fear their sons are falling behind, but also parents of girls, who fear boys' academic deficits will undermine their daughters' chances of finding suitable mates.

But the truth is far different from what these accounts suggest. The real story is not bad news about boys doing worse; it's good news about girls doing better.

In fact, with a few exceptions, American boys are scoring higher and achieving more than they ever have before. But girls have just improved their performance on some measures even faster. As a result, girls have narrowed or even closed some academic gaps that previously favored boys, while other long-standing gaps that favored girls have widened, leading to the belief that boys are falling behind.

There's no doubt that some groups of boys—particularly Hispanic and black boys and boys from low-income homes—are in real trouble. But the predominant issues for them are race and class, not gender. Closing racial and economic gaps would help poor and minority boys more than closing gender gaps, and focusing on gender gaps may distract attention from the bigger problems facing these youngsters.

The hysteria about boys is partly a matter of perspective. While most of society has finally embraced the idea of equality for women, the idea that women might actually surpass men in some areas (even as they remain behind in others) seems hard for many people to swallow. Thus, boys are routinely characterized as "falling behind" even as they improve in absolute terms.

In addition, a dizzying array of so-called experts have seized on the boy crisis as a way to draw attention to their pet educational, cultural, or ideological issues. Some say that contemporary classrooms

are too structured, suppressing boys' energetic natures and tendency to physical expression; others contend that boys need more structure and discipline in school. Some blame "misguided feminism" for boys' difficulties, while others argue that "myths" of masculinity have a crippling impact on boys.³ Many of these theories have superficially plausible rationales that make them appealing to some parents, educators, and policymakers. But the evidence suggests that many of these ideas come up short.

Unfortunately, the current boy crisis hype and the debate around it are based more on hopes and fears than on evidence. This debate benefits neither boys nor girls, while distracting attention from more serious educational problems—such as large racial and economic achievement gaps—and practical ways to help both boys and girls succeed in school.

A New Crisis?

"The Boy Crisis. At every level of education, they're falling behind. What to do?"

—*Newsweek* cover headline, Jan. 30, 2006

Newsweek is not the only media outlet publishing stories that suggest boys' academic accomplishments and life opportunities are declining. But it's not true. Neither the facts reported in these articles nor data from other sources support the notion that boys' academic performance is falling. In fact, overall academic achievement and attainment for boys is higher than it has ever been.

Long-Term Trends

Looking at student achievement and how it has changed over time can be complicated. Most test scores have little meaning themselves; what matters is what scores tell us about how a group of students is doing relative to something else: an established definition of what students need to know, how this group of students performed in the past, or

how other groups of students are performing. Further, most of the tests used to assess student achievement are relatively new, and others have changed over time, leaving relatively few constant measures.

The National Assessment of Educational Progress (NAEP), commonly known as "The Nation's Report Card," is a widely respected test conducted by the U.S. Department of Education using a large, representative national sample of American students. NAEP is the only way to measure national trends in boys' and girls' academic achievements over long periods of time.⁴ There are two NAEP tests. The "main NAEP" has tracked U.S. students' performance in reading, math, and other academic subjects since the early 1990s. It tests students in grades four, eight, and 12. The "long-term trend NAEP" has tracked student performance since the early 1970s. It tests students at ages 9, 13, and 17.

Reading

The most recent main NAEP assessment in reading, administered in 2005, does not support the notion that boys' academic achievement is falling. In fact, fourth-grade boys did better than they had done in both the previous NAEP reading assessment, administered in 2003, and the earliest comparable assessment, administered in 1992. Scores for both fourth- and eighth-grade boys have gone up and down over the past decade, but results suggest that the reading skills of fourth- and eighth-grade boys have improved since 1992.⁵

The picture is less clear for older boys. The 2003 and 2005 NAEP assessments included only fourth- and eighth-graders, so the most recent main NAEP data for 12th-graders dates back to 2002. On that assessment, 12th-grade boys did worse than they had in both the previous assessment, administered in 1998, and the first comparable assessment, administered in 1992. At the 12th-grade level, boys' achievement in reading does appear to have fallen during the 1990s and early 2000s.⁶

Even if younger boys have improved their achievement over the past decade, however, this could represent a decline if boys' achievement had risen rapidly in previous decades. Some commentators have asserted that the boy crisis has its roots in the mid- or early-1980s. But long-term NAEP data simply does not support these claims. In fact, 9-year-old boys did better on the most recent long-term reading NAEP, in 2004, than they have at any time since the test was first administered in 1971. Nine-year-old boys' performance rose in the 1970s, declined in the 1980s, and has been rising since the early 1990s.

Like the main NAEP, the results for older boys on the long-term NAEP are more mixed. Thirteen-year-old boys have improved their performance slightly compared with 1971, but for the most part their performance over the past 30 years has been flat. Seventeen-year-old boys are doing about the same as they did in the early 1970s, but their performance has been declining since the late 1980s.⁷

The main NAEP also shows that white boys score significantly better than black and Hispanic boys in reading at all grade levels. These differences far outweigh all changes in the overall performance of boys over time. For example, the difference between white and black boys on the fourth-grade NAEP in reading in 2005 was 10 times as great as the improvement for all boys on the same test since 1992.

And while academic performance for minority boys is often shockingly low, it's not getting worse. The average fourth-grade NAEP reading scores of black boys improved more from 1995 to 2005 than those of white and Hispanic boys or girls of any race.

Math

The picture for boys in math is less complicated. Boys of all ages and races are scoring as high—or higher—in math than ever before. From 1990 through 2005, boys in grades four and eight

improved their performance steadily on the main NAEP, and they scored significantly better on the 2005 NAEP than in any previous year. Twelfth-graders have not taken the main NAEP in math since 2000. That year, 12th-grade boys did better than they had in 1990 and 1992, but worse than they had in 1996.⁸

Both 9- and 13-year-old boys improved gradually on the long-term NAEP since the 1980s (9-year-old boys' math performance did not improve in the 1970s). Seventeen-year-old boys' performance declined through the 1970s, rose in the 1980s, and remained relatively steady during the late 1990s and early 2000s.⁹ As in reading, white boys score much better on the main NAEP in math than do black and Hispanic boys, but all three groups of boys are improving their math performance in the elementary and middle school grades.¹⁰

Other Subjects

In addition to the main and long-term NAEP assessments in reading and math, the NAEP also administers assessments in civics, geography, science, U.S. history, and writing. The civics assessment has not been administered since 1998, but the geography and U.S. history assessments were both administered in 1994 and 2001; the writing assessment in 1998 and 2002; and the science assessment in 1996, 2000, and 2005.

In geography, there was no significant change in boys' achievement at any grade level from 1994 to 2001. In U.S. history, fourth- and eighth-grade boys improved their achievement, but there was no significant change for 12th-grade boys. In writing, both fourth- and eighth-grade boys improved their achievement from 1998 to 2002, but 12th-grade boys' achievement declined. In science, fourth-grade boys' achievement in 2005 improved over their performance in both 1996 and 2000, eighth-grade boys showed no significant change in achievement, and 12th-grade boys' achievement declined since 1996.

Overall Long-Term Trends

A consistent trend emerges across these subjects: There have been no dramatic changes in the performance of boys in recent years, no evidence to indicate a boy crisis. Elementary-school-age boys are improving their performance; middle school boys are either improving their performance or showing little change, depending on the subject; and high school boys' achievement is declining in most subjects (although it may be improving in math). These trends seem to be consistent across all racial subgroups of boys, despite the fact that white boys perform much better on these tests than do black and Hispanic boys.

Evidence of a decline in the performance of older boys is undoubtedly troubling. But the question to address is whether this is a problem for older boys or for older students generally. That can be best answered by looking at the flip side of the gender equation: achievement for girls.

The Difference Between Boys and Girls

To the extent that tales of declining boy performance are grounded in real data, they're usually framed as a decline relative to girls. That's because, as described above, boy performance is generally staying the same or increasing in absolute terms.

But even relative to girls, the NAEP data for boys paints a complex picture. On the one hand, girls outperform boys in reading at all three grade levels assessed on the main NAEP. Gaps between girls and boys are smaller in fourth grade and get larger in eighth and 12th grades. Girls also outperform boys in writing at all grade levels.

In math, boys outperform girls at all grade levels, but only by a very small amount. Boys also outperform girls—again, very slightly—in science and by a slightly larger margin in geography. There are no significant gaps between male and female achievement on the NAEP in U.S. history. In general, girls outperform boys in reading and writing by

greater margins than boys outperform girls in math, science, and geography.

But this is nothing new. Girls have scored better than boys in reading for as long as the long-term NAEP has been administered. And younger boys are actually catching up: The gap between boys and girls at age 9 has narrowed significantly since 1971—from 13 points to five points—even as both genders have significantly improved. Boy-girl gaps at age 13 haven't changed much since 1971—and neither has boys' or girls' achievement.

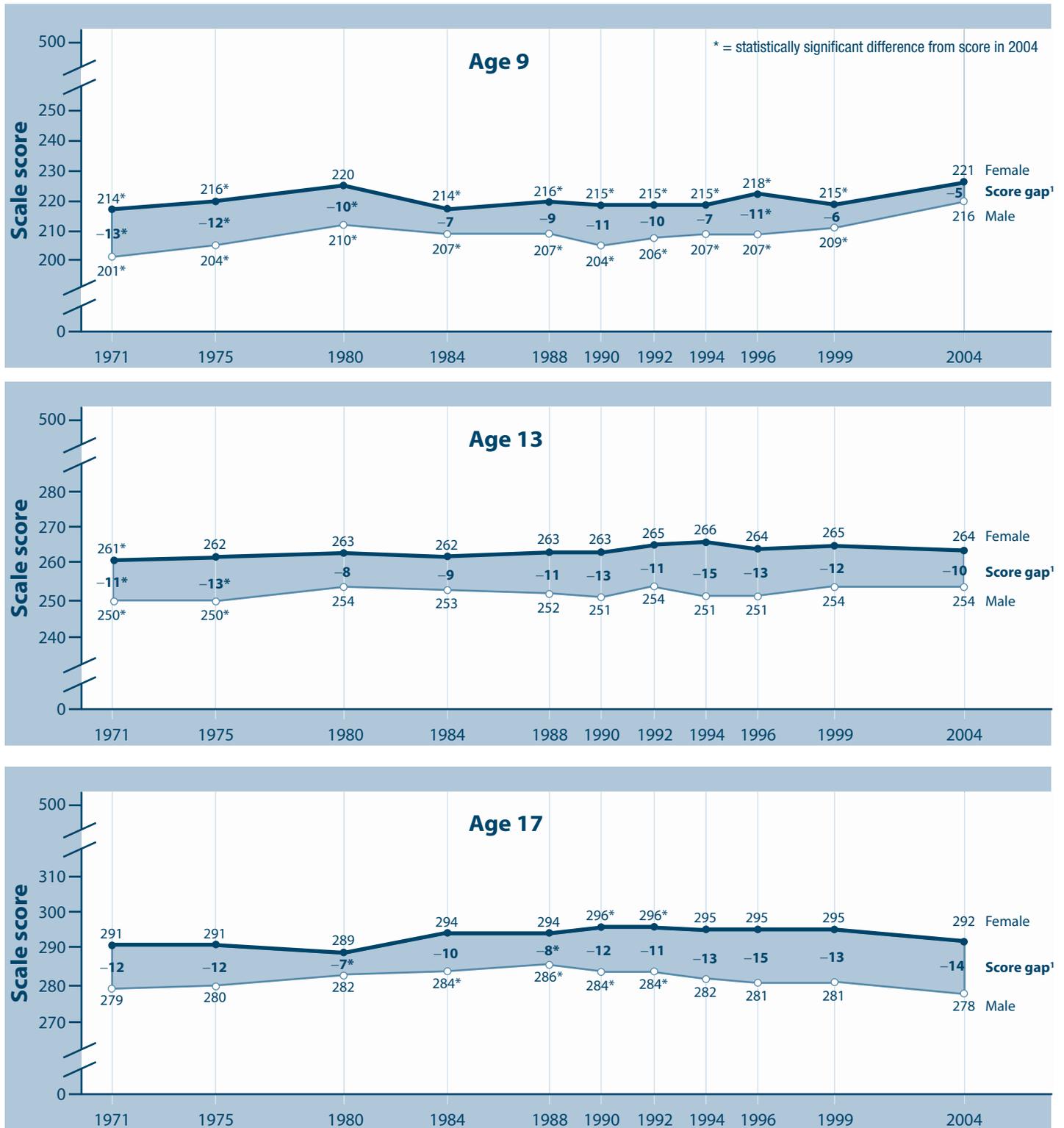
At age 17, gaps between boys and girls in reading are also not that much different from what they were in 1971, but they are significantly bigger than they were in the late 1980s, before achievement for both genders—and particularly boys—began to decline.

The picture in math is even murkier. On the first long-term NAEP assessment in 1973, 9- and 13-year-old girls actually scored better than boys in math, and they continued to do so throughout the 1970s. But as 9- and 13-year-olds of both genders improved their achievement in math during the 1980s and 1990s, boys *pulled ahead* of girls, opening up a small gender gap in math achievement that now favors boys. It's telling that even though younger boys are now doing better than girls on the long-term NAEP in math, when they once lagged behind, no one is talking about the emergence of a new "girl crisis" in elementary- and middle-school math.

Seventeen-year-old boys have always scored better than girls on the long-term NAEP in math, but boys' scores declined slightly more than girls' scores in the 1970s, and girls' scores have risen slightly more than those of boys since. As a result, older boys' advantage over girls in math has narrowed.

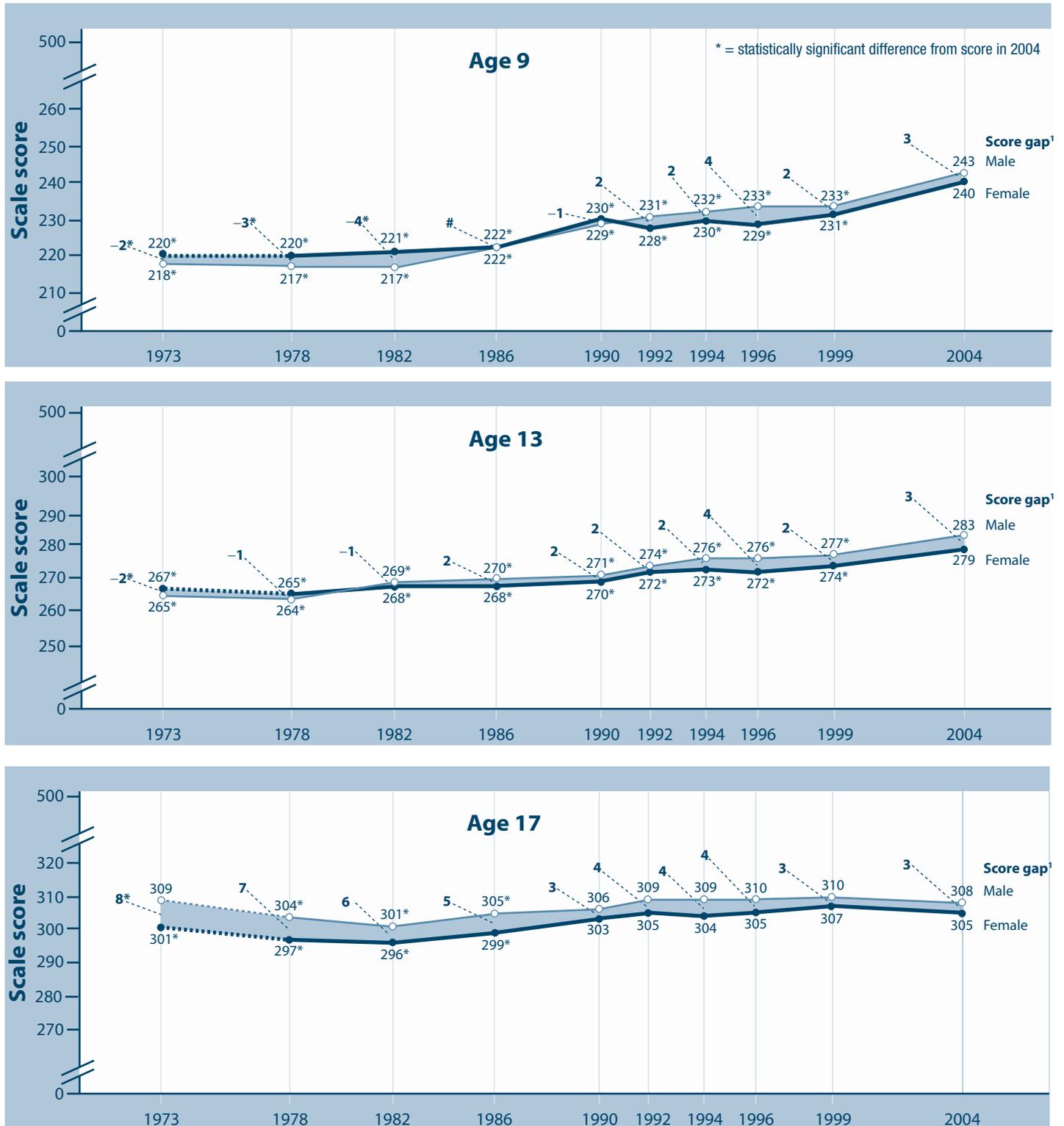
Overall, there has been no radical or recent decline in boys' performance relative to girls. Nor is there a clear overall trend—boys score higher in some areas, girls in others.

Figure 1. Trends in Reading Achievement of Boys and Girls



Source: M. Perie, R. Moran, and A.D. Lutkus, *NAEP 2004 Trends in Academic Progress: Three Decades of Student Achievement in Reading and Mathematics*. Washington, D.C., Institute of Education Sciences, National Center for Education Statistics, 2005. <http://nces.ed.gov/nationsreportcard/ltr/results2004/>.

Figure 2. Trends in Math Achievement of Boys and Girls



Source: M. Perie, R. Moran, and A.D. Lutkus, *NAEP 2004 Trends in Academic Progress: Three Decades of Student Achievement in Reading and Mathematics*. Washington, D.C., Institute of Education Sciences, National Center for Education Statistics, 2005. <http://nces.ed.gov/nationsreportcard/ltt/results2004/>.

The fact that achievement for older students is stagnant or declining for both boys and girls, to about the same degree, points to another important element of the boy crisis. The problem is most likely not that high schools need to be fixed to meet the needs of boys, but rather that they need to be fixed to meet the needs of *all* students, male and female. The need to accurately parse the influence of gender and other student categories is also acutely apparent when we examine the issues of race and income.

We Should Be Worried About Some Subgroups of Boys

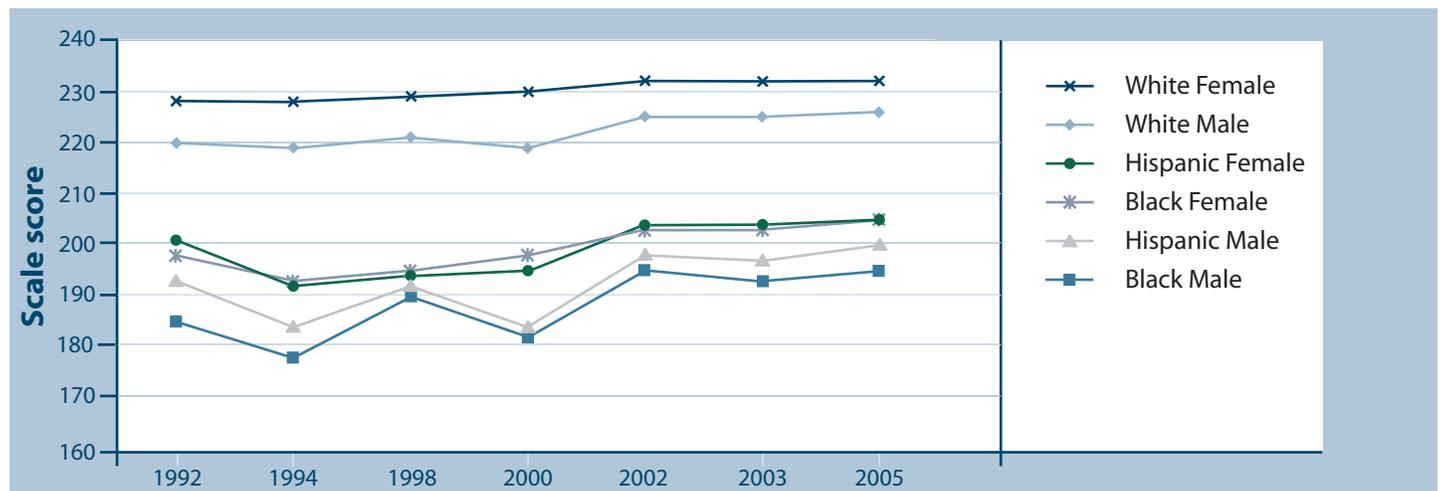
There are groups of boys for whom “crisis” is not too strong a term. When racial and economic gaps combine with gender achievement gaps in reading, the result is disturbingly low achievement for poor, black, and Hispanic boys.

But the gaps between students of different races and classes are much larger than those for students of different genders—anywhere from two to five times as big, depending on the grade. The only exception is among 12th-grade boys, where the achievement gap between white girls and white boys in reading is the same size as the gap between white and black boys in reading and is larger than the gap between

white and Hispanic boys. Overall, though, poor, black, and Hispanic boys would benefit far more from closing racial and economic achievement gaps than they would from closing gender gaps. While the gender gap picture is mixed, the racial gap picture is, unfortunately, clear across a wide range of academic subjects.

In addition to disadvantaged and minority boys, there are also reasons to be concerned about the substantial percentage of boys who have been diagnosed with disabilities. Boys make up two-thirds of students in special education—including 80 percent of those diagnosed with emotional disturbances or autism—and boys are two and a half times as likely as girls to be diagnosed with attention deficit hyperactivity disorder (ADHD).¹¹ The number of boys diagnosed with disabilities or ADHD has exploded in the past 30 years, presenting a challenge for schools and causing concern for parents. But the reasons for this growth are complicated, a mix of educational, social, and biological factors. Evidence suggests that school and family factors—such as poor reading instruction, increased awareness of and testing for disabilities, or over-diagnosis—may play a role in the increased rates of boys diagnosed with learning disabilities or emotional disturbance. But boys also have a higher

Figure 3. Grade Four NAEP Reading: Achievement Gaps by Race are Bigger Than Gender Gaps



Source: NAEP Data Explorer.

incidence of organic disabilities, such as autism and orthopedic impairments, for which scientists don't currently have a completely satisfactory explanation. Further, while girls are less likely than boys to be diagnosed with most disabilities, the number of girls with disabilities has also grown rapidly in recent decades, meaning that this is not just a boy issue.

Moving Up and Moving On

Beyond achievement, there's the issue of attainment—student success in moving forward along the education pathway and ultimately earning credentials and degrees. There are undeniably some troubling numbers for boys in this area. But as with achievement, the attainment data does not show that boys are doing worse.

Elementary-school-age boys are more likely than girls to be held back a grade. In 1999, 8.3 percent of boys ages 5–12 had been held back at least one grade, compared with 5.2 percent of girls. However, the percentage of boys retained a grade has declined since 1996, while the percentage of girls retained has stayed the same.¹²

Mirroring the trends in achievement noted above, racial and economic differences in grade retention are as great as or greater than gender differences. For example, white boys are more likely than white girls to be retained a grade, but about equally likely as black and Hispanic girls. Black and Hispanic boys are much more likely to be held back than either white boys or girls from any racial group. Similarly, both boys and girls from low-income homes are much more likely to be held back, while boys from high-income homes are less likely to be held back than are girls from either low- or moderate-income families.¹³

Boys are also much more likely than girls to be suspended or expelled from school. According to the U.S. Department of Justice, 24 percent of girls have been suspended from school at least once by age 17, but so have fully 42 percent of boys.¹⁴ This is undeniably cause for concern.

Boys are also more likely than girls to drop out of high school. Research by the Manhattan Institute found that only about 65 percent of boys who start high school graduate four years later, compared with 72 percent of girls. This gender gap cuts across all racial and ethnic groups, but it is the smallest for white and Asian students and much larger for black and Hispanic students. Still, the gaps between graduation rates for white and black or Hispanic students are much greater than gaps between rates for boys and girls of any race.¹⁵ These statistics, particularly those for black and Hispanic males, are deeply troubling. There is some good news, though, because both men and women are slightly more likely to graduate from high school today than they were 30 years ago.¹⁶

Table 1. Four-Year High School Graduation Rates by Race and Gender

	Male	Female
Asian	70%	73%
White	74%	79%
Hispanic	49%	58%
Black	48%	59%

Source: Jay P. Greene and Marcus Winters, *Leaving Boys Behind: Public High School Graduation Rates*, Manhattan Institute Civic Report No. 48, April 2006. http://www.manhattan-institute.org/html/cr_48.htm#05.

Aspirations and Preparation

There is also some evidence that girls who graduate from high school have higher aspirations and better preparation for postsecondary education than boys do. For example, a University of Michigan study found that 62 percent of female high school seniors plan to graduate from a four-year-college, compared with 51 percent of male students.¹⁷ Girls are also more likely than boys to have taken a variety of college-preparatory classes, including geometry, algebra II, chemistry, advanced biology, and foreign languages, although boys are more likely to have taken physics.

But this is another case where boys are actually improving, just not as fast as girls. The

percentages of both boys and girls taking higher-level math and science courses in high school have increased dramatically in the past 20 years. For example, the percentages of both boys and girls taking precalculus have more than quadrupled since 1982, and the percentages of students taking calculus have more than doubled. But, particularly in the sciences, the percentage of girls taking advanced courses in high school has increased more rapidly than the percentage of boys, so that girls are now more likely than boys to take such classes.¹⁸

Similarly, the percentages of both boys and girls taking AP exams, which measure whether students have mastered rigorous, college-level curricula in various subjects, have increased dramatically in the past 20 years: Four and a half times as many students took AP tests in 2002 as did so in 1985. But girls have increased their AP test-taking more rapidly than boys, so that more girls than boys now take AP tests. In 2002, girls took 54 percent of AP exams, compared with 46 percent for boys. But while girls take the majority of AP exams in some subjects—social sciences, English, and especially foreign languages—boys dominate in other subjects, including calculus, the sciences, and computer science.¹⁹

It is also the case that more girls than boys take college entrance exams—the SAT and the ACT. But boys have higher average scores than girls do, on both. In fact, boys score significantly higher than girls on both the verbal and math subtests of the SAT, and they have done so throughout most of the exam's history (girls scored slightly higher than boys on the verbal portion of the exam in the late 1960s), although boys' average score advantage is much greater on the math than the verbal section.²⁰

The male advantage on the SAT also appears to contradict the notion of a boy crisis, but it should not really be interpreted that way. Girls' average SAT scores are lower than those of boys at least in part because more girls than boys take the SAT.

Since the SAT is taken only by students who intend to go to college, most high-performing students of both genders take it. The larger population of girls taking the SAT means more girls than boys from lower on the achievement distribution are taking the test, resulting in lower average scores for girls. In addition, the SAT verbal section has historically relied heavily on analogies, an area of abilities in which psychological research finds that men consistently outperform women.²¹ Changes to the SAT in 2005, which eliminated analogies and added a writing section, are likely to result in improved scores for women relative to men.

The Allegedly Disappearing Big Man on Campus

“Forty-two men for every 58 women go to college now, undergrad and grad. That means 1 in 4 female students can’t find a male peer to date.”

—*Esquire*, July 2006

“Women now significantly outnumber men on college campuses, a phenomenon familiar enough to any sorority sister seeking a date to the next formal.”

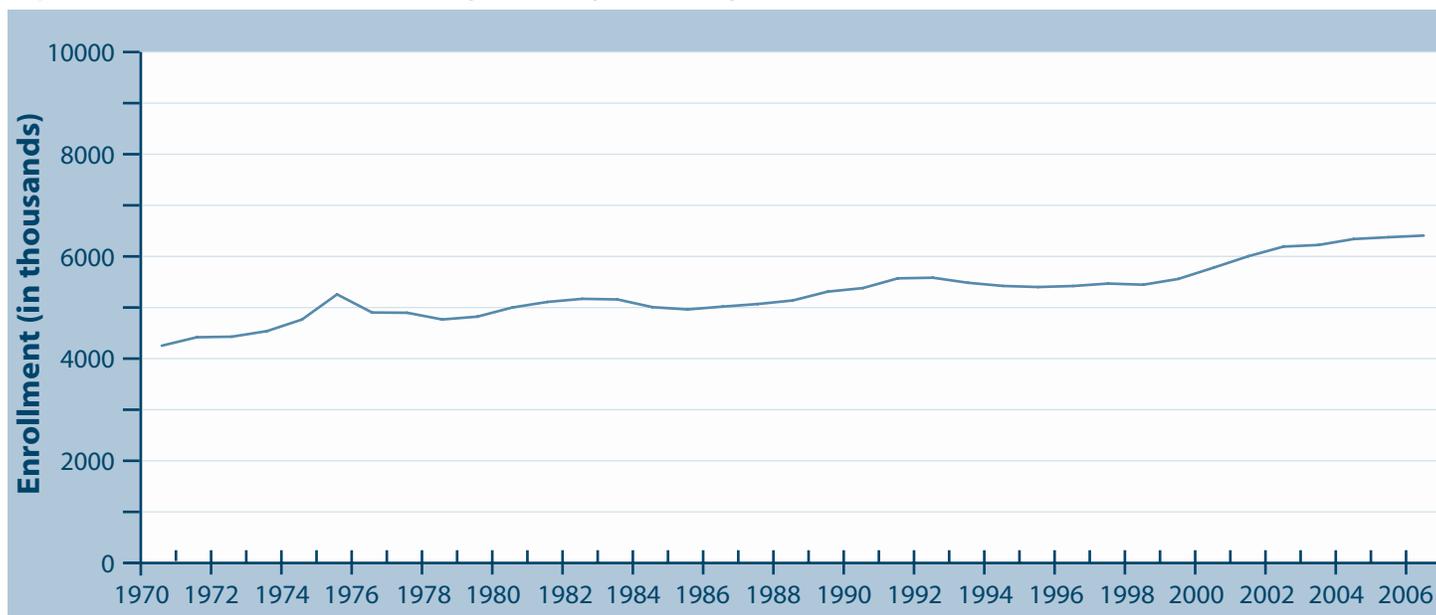
—Richard Whitmire, *The New Republic*, Jan. 23, 2006

To hear commentators tell it, college campuses are becoming all-female enclaves, suffering from a kind of creeping Wellesleyfication. But Figure 4 shows a different story—men are enrolling in college in greater numbers than ever before and at historically high rates.

This is undeniably good news for the nation, as more and more future workers will need college credentials to compete in the global economy. Why, then, all the anxiety? Because, as Figure 5 shows, women are increasing college enrollment at an even faster rate.

Of men graduating from high school in spring 2001, 60 percent enrolled in college in the following fall, compared with 64 percent of women. The gap is smaller among those enrolling in four-year institutions: 41 percent of men, compared with 43 percent of women.

Figure 4. The Number of Men Going to College is Rising...



Source: U.S. Department of Education, National Center for Education Statistics, *The Condition of Education 2006* (Washington, D.C.: U.S. Government Printing Office, 2006).

Women are, however, more likely to graduate from college once they get there. Sixty-six percent of women who enrolled in college as freshmen seeking a bachelor's degree during the 1995-96 school year had completed a bachelor's degree by 2001, compared with 59 percent of men.²² As with high school graduation rates, this appears to be the area in which gender-focused concerns are most justified, with men less likely to stay in school and earn a degree.

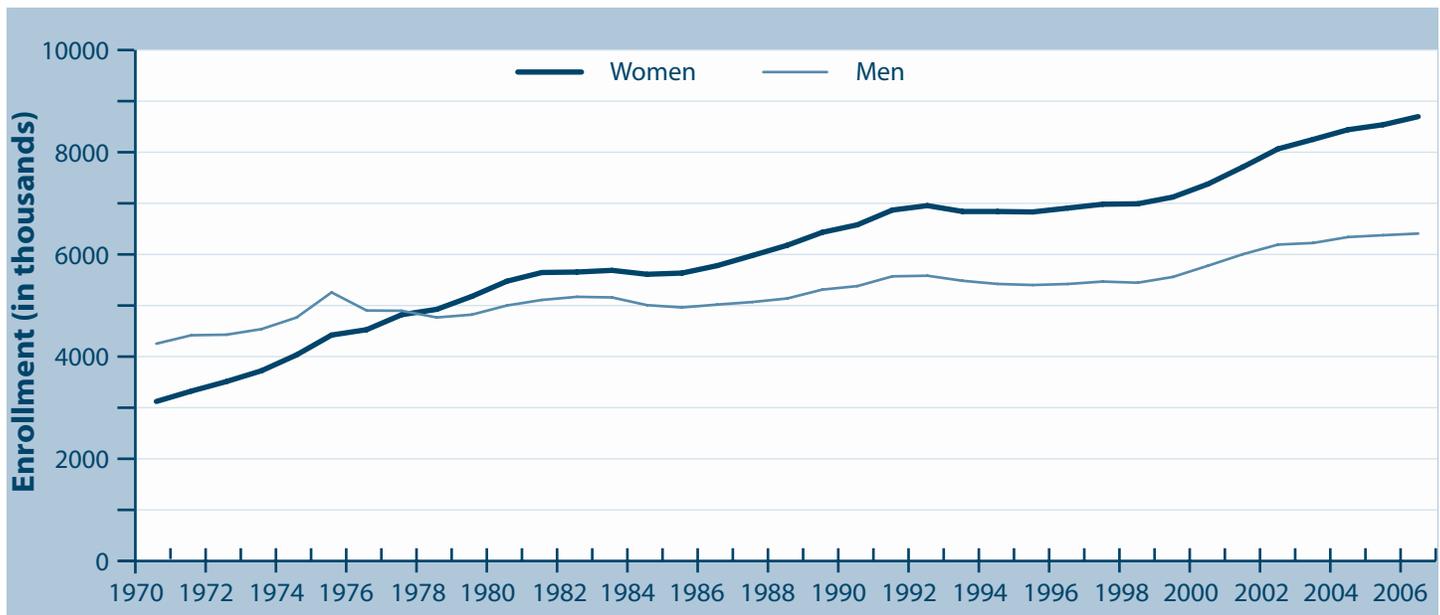
Because men are less likely to go to college and more likely to drop out, the share of college students who are men has declined. From 1970 to 2001, men's share of college enrollment fell from 58 to 44 percent, while women's share blossomed from 42 to 56 percent. And fully 57 percent of bachelor's degrees in 2001 were awarded to women.²³

But these numbers don't necessarily indicate an emerging crisis. Like many other trends in gender and education, they're nothing new. In fact, nearly two-thirds of the increase in women's share of college enrollment occurred more than two decades ago, between 1970 and 1980.

Overall trends, moreover, can be misleading. Women are overrepresented among both nontraditional students—older students going back to college after working or having a family—and students at two-year colleges. Among students enrolled in four-year colleges right out of high school, or traditional college students, the percentages of men and women are closer—and the dating situation is not as dire as Whitmire and *Esquire* suggest.

More important, even as their share of enrollment on college campuses declines, young men are actually more likely to attend and graduate from college than they were in the 1970s and 1980s. The share of men 25 to 29 who hold a bachelor's degree has also increased, to 22 percent—a rate significantly higher than that for older cohorts of men.²⁴ But the number of women enrolling in and graduating from college has increased much more rapidly during the same time period. The proportion of women enrolling in college after high school graduation, for example, increased nearly 50 percent between the early 1970s and 2001, and nearly 25 percent of women ages 25 to 29 now hold bachelor's degrees.

Figure 5. ...but the Number of Women is Rising Even Faster



Source: U.S. Department of Education, National Center for Education Statistics, *The Condition of Education 2006* (Washington, D.C.: U.S. Government Printing Office, 2006).

While it's possible to debate whether men's college attendance is increasing fast enough to keep up with economic changes, it's simply inaccurate to imply that men are disappearing from college campuses or that they are doing worse than they were 10 or 20 years ago. Men's higher-education attainment is not declining; it's increasing, albeit at a slower rate than that of women.

In addition, while women have outstripped men in undergraduate enrollment, women still earn fewer than half of first professional degrees, such as law, medicine, and dentistry, and doctorates. Women do earn more master's degrees than men, but female graduate students are heavily concentrated in several traditionally female fields, most notably education and psychology.²⁵

Outcomes of Education

With women attending and graduating from college at higher rates than men, we might expect young women, on average, to be earning more than men. But the reality is the opposite.

Female college degrees are disproportionately in relatively low-paying occupations like teaching. As a result, women ages 25–34 who have earned a bachelor's degree make barely more money than men of the same age who went to college but didn't get a bachelor's degree.²⁶ Further, recent female college graduates earn less than their male counterparts, even after controlling for choice of field.²⁷

In other words, the undeniable success of more women graduating from high school, going to college, and finishing college ultimately results in women remaining behind men economically—just by not as much as before. Far from surging ahead of men, women are still working to catch up.

The Source of the Boy Crisis: A Knowledge Deficit and a Surplus of Opportunity

It's clear that some gender differences in education are real, and there are some groups of disadvantaged

boys in desperate need of help. But it's also clear that boys' overall educational achievement and attainment are not in decline—in fact, they have never been better. What accounts for the recent hysteria?

It's partly an issue of simple novelty. The contours of disadvantage in education and society at large have been clear for a long time—low-income, minority, and female people consistently fall short of their affluent, white, and male peers. The idea that historically privileged boys could be at risk, that boys could be shortchanged, has simply proved too deliciously counterintuitive and “newsworthy” for newspaper and magazine editors to resist.

The so-called boy crisis also feeds on a lack of solid information. Although there are a host of statistics about how boys and girls perform in school, we actually know very little about why these differences exist or how important they are. There are many things—including biological, developmental, cultural, and educational factors—that affect how boys and girls do in school. But untangling these different influences is incredibly difficult. Research on the causes of gender differences is hobbled by the twin demons of educational research: lack of data and the difficulty of drawing causal connections among multiple, complex influences. Nor do we know what these differences mean for boys' and girls' future economic and other opportunities.

Yet this hasn't stopped a plethora of so-called experts—from pediatricians and philosophers to researchers and op-ed columnists—from weighing in with their views on the causes and likely effects of educational gender gaps. In fact, the lack of solid research evidence confirming or debunking any particular hypothesis has created fertile ground for all sorts of people to seize on the boy crisis to draw attention to their pet educational, cultural or ideological issues.

The problem, we are told, is that the structured traditional classroom doesn't accommodate boys' energetic nature and need for free motion—or it's that today's schools don't provide enough structure

or discipline. It's that feminists have demonized typical boy behavior and focused educational resources on girls—or it's the “box” boys are placed in by our patriarchal society. It's that our schools' focus on collaborative learning fails to stimulate boys' natural competitiveness—or it's that the competitive pressures of standardized testing are pushing out the kind of relevant, hands-on work on which boys thrive.

The boy crisis offers a perfect opportunity for those seeking an excuse to advance ideological and educational agendas. Americans' continued ambivalence about evolving gender roles guarantees that stories of “boys in crisis” will capture public attention. The research base is internally contradictory, making it easy to find superficial support for a wide variety of explanations but difficult for the media and the public to evaluate the quality of evidence cited. Yet there is not sufficient evidence—or the right kind of evidence—available to draw firm conclusions. As a result, there is a sort of free market for theories about why boys are underperforming girls in school, with parents, educators, media, and the public choosing to give credence to the explanations that are the best marketed and that most appeal to their pre-existing preferences.

Unfortunately, this dynamic is not conducive to a thoughtful public debate about how boys and girls are doing in school or how to improve their performance.

Hard-Wired Inequality?

One branch of the debate over gender and education has focused on various theories of divergence between male and female brains. Men and women are “wired differently,” people say, leading to all kinds of alleged problems and disparities that must be addressed. There's undoubtedly some truth here. The difficulty is separating fact from supposition.

The quest to identify and explain differences between men's and women's mental abilities is as

old as psychology itself. Although the earliest work in this genre began with the assumption that women were intellectually inferior to men, and sought both to prove and explain why this was the case, more recent and scientifically valid research also finds differences in men's and women's cognitive abilities, as well as in the physiology of their brains.

It's important to note that research does not find that one gender is smarter than the other—on average, men and women score the same on tests of general intelligence.²⁸ But there are differences between men's and women's performance in different types of abilities measured by intelligence tests. In general, women have higher scores than men on most tests of verbal abilities (verbal analogies being an exception), while men have higher scores on tests of what psychologists call “visual-spatial” abilities—the ability to think in terms of nonverbal, symbolic information, measured through such tasks as the ability to place a horizontal line in a tilted frame or to identify what the image of an irregular object would look like if the object were rotated. Quantitative or mathematical abilities are more even, with men performing better on some types of problems—including probability, statistics, measurement and geometry—while women perform better on others, such as computation, and both genders perform equally well on still others.

Much of this research is based on studies with adults—particularly college students—but we know that gender differences in cognitive abilities vary with development. Differences in verbal abilities are among the first to appear; vocabulary differences, for example, are seen before children are even 2 years old, and by the time they enter kindergarten, girls are more likely than boys to know their letters and be able to associate letters with sounds.²⁹ Male advantages in visual-spatial abilities emerge later in childhood and adolescence.³⁰

The research identifying these differences in male and female cognitive abilities does not explain their cause, however. There may be innate, biologically based differences in men and women. But gender

differences may also be the result of culture and socialization that emphasize different skills for men and women and provide both genders different opportunities to develop their abilities.

Researchers have investigated a variety of potential biological causes for these differences. There is evidence that sex hormones in the womb, which drive the development of the fetus's sex organs, also have an impact on the brain. Children who were exposed to abnormal levels of these hormones, for example, may develop cognitive abilities more like those of the opposite sex. Increased hormone levels at puberty may again affect cognitive development. And performance on some types of cognitive tests tends to vary with male and female hormonal cycles.³¹

In addition, new technologies that allow researchers to look more closely into the brain and observe its activities have shown that there are differences between the sexes in the size of various brain structures and in the parts of the brain men and women use when performing different tasks.³²

But while this information is intriguing, it must be interpreted with a great deal of caution. Although our knowledge of the brain and its development has expanded dramatically in recent years, it remains rudimentary. In the future, much of our current thinking about the brain will most likely seem as unsophisticated as the work of the late 19th and early 20th century researchers who sought to prove female intellectual inferiority by comparing the size of men's and women's skulls.

In particular, it is notoriously difficult to draw causal links between observations about brain structure or activity and human behavior, a point that scientists reporting the findings of brain research often take great pains to emphasize. Just as correlation does not always signify causation in social science research, correlations between differences in brain structure and observed differences in male and female behavior do not necessarily mean that the former leads to the latter.

But these caveats have not prevented many individuals from confidently citing brain research to advance their preferred explanation of gender gaps in academic achievement.

Proponents of different educational philosophies and approaches cherry-pick findings that seem to support their visions of public education. And a growing boys industry purports to help teachers use brain research on gender differences to improve boys' academic achievement. But many of these individuals and organizations are just seizing on the newest crisis—boys' achievement—to make money and promote old agendas. Scientific-sounding brain research has lent an aura of authority to people who see anxiety about boys as an opportunity for personal gain. Many have also added refashioned elements of sociology to their boys-in-crisis rhetoric.

Dubious Theories and Old Agendas

"Girl behavior becomes the gold standard. Boys are treated like defective girls."

—Psychologist Michael Thompson, as quoted in *Newsweek*

Thompson is just one of many commentators who argue that today's schools disadvantage boys by expecting behavior—doing homework, sitting still, working collaboratively, expressing thoughts and feelings verbally and in writing—that comes more naturally to girls. These commentators argue that schools are designed around instructional models that work well with girls' innate abilities and learning styles but do not provide enough support to boys or engage their interests and strengths. While female skills like organization, empathy, cooperativeness, and verbal agility are highly valued in schools, male strengths like physical vigor and competitiveness are overlooked and may even be treated as problems rather than assets, the argument goes.

Building from this analysis, a wealth of books, articles, and training programs endeavor to teach

educators how to make schools more "boy friendly." Many of these suggestions—such as allowing boys to choose reading selections that appeal to their interests—are reasonable enough.

But many other recommendations are based on an inappropriate application of brain research on sex differences. Many of these authors draw causal connections between brain research findings and stereotypical male or female personality traits without any evidence that such causality exists, as the sidebar demonstrates. These analyses also tend to ignore the wide variation among individuals of the same sex. Many girls have trouble completing their homework and sitting still, too, and some boys do not.

Misapplying Brain Research to Education

"Girls have, in general, stronger neural connectors in their temporal lobes than boys have. These connectors lead to more sensually detailed memory storage, better listening skills, and better discrimination among the various tones of voice. This leads, among other things, to greater use of detail in writing assignments."

—Michael Gurian and Kathy Stevens, *Educational Leadership*, November 2004

This paragraph offers a classic example of how some practitioners misapply brain research to education and gender. For starters, "neural connectors" is not a scientific term—by the time the research evidence behind this claim gets to readers of this article, it is dramatically watered down and redigested from what the initial studies said.

But the real problem here is that Gurian and Stevens attempt to string together a series of cause-and-effect relationships for which no evidence exists. Yes, there is some evidence of greater interconnection between different parts of women's brains. Yes, some studies have found that women remember an array of objects better than men do and that they are better at hearing certain tones than men are. (It's also worth noting that most of these studies were conducted not with children but with adults.) And some teachers may say that boys do not use detail in writing assignments. But there is no evidence causally linking any one of these things to another. Gurian and Stevens simply pick up two factoids and claim they must be related. They also ignore many other potential explanations for the behavior they describe, such as the possibility that boys use less detail because they are in a greater hurry than girls, or that they tend to read books that have less detailed description and therefore use less in their own writing.

Sources: Michael Gurian and Kathy Stevens, "With Boys and Girls in Mind," *Educational Leadership*, 62: 3, November 2004. http://www.ascd.org/authors/ed_lead/el200411_gurian.html; Thomas Newkirk, "Brain Research—A Call for Skepticism," *Education Week*, Oct. 12, 2005.

Members of the growing “boys industry” of researchers, advocates, and pop psychologists include family therapist Michael Gurian, author of *The Minds of Boys*, *Boys and Girls Learn Differently!*, and numerous other books about education and gender; Harvard psychologist William Pollack, director of the Center for Research on Boys at McLean Hospital and author of *Real Boys*; and Michael Thompson, clinical psychologist and the author of *Raising Cain*. All of these authors are frequently cited in media coverage of the boy crisis. A quick search on Amazon.com also turns up Jeffrey Wilhelm’s *Reading Don’t Fix No Chevys*, Thomas Newkirk’s *Misreading Masculinity: Boys, Literacy and Popular Culture*, Christina Hoff Sommers’ *The War On Boys*, Leonard Sax’s *Why Gender Matters*, and *Hear Our Cry: Boys in Crisis*, by Paul D. Slocumb. A review of these books shows that the boys industry is hardly monolithic. Its practitioners seem to hold a plethora of perspectives and philosophies about both gender and education, and their recommendations often contradict one another.

Some focus on boys’ emotions and sense of self-worth, while others are more concerned with implementing pedagogical practices—ranging from direct instruction to project-based learning—that they believe will better suit boys’ learning style. Still others focus on structural solutions, such as smaller class sizes or single-sex learning environments. But all are finding an audience among parents, educators, and policymakers concerned about boys.

It would be unfair to imply that these authors write about boys for purely self-serving motives—most of these men and women seem to be sincerely concerned about the welfare of our nation’s boys. But the work in this field leaves one skeptical of the quality of research, information, and analysis that are shaping educators’ and parents’ beliefs and practices as they educate boys and girls. Perhaps most tellingly, ideas about how to make schools more “boy friendly” align suspiciously well with educational and ideological beliefs the individuals promoting them had long before boys were making national headlines. And some of these prescriptions are diametrically opposed to one another.

A number of conservative authors, think tanks, and journals have published articles arguing that progressive educational pedagogy and misguided feminism are hurting boys.³³ According to these critics, misguided feminists have lavished resources on female students at the expense of males and demonized typical boy behaviors such as rowdy play. At the same time, progressive educational pedagogy is harming boys by replacing strict discipline with permissiveness, teacher-led direct instruction with student-led collaborative learning, and academic content with a focus on developing students’ self-esteem. The boy crisis offers an attractive way for conservative pundits to get in some knocks against feminism and progressive education and also provides another argument for educational policies—such as stricter discipline, more traditional curriculum, increased testing and competition, and single-sex schooling—that conservatives have long supported.

Progressive education thinkers, on the other hand, tend to see boys’ achievement problems as evidence that schools have not gone far *enough* in adopting progressive tenets and are still forcing all children into a teacher-led pedagogical box that is particularly ill-suited to boys’ interests and learning styles. Similarly, the responses progressive education writers recommend—more project-based and hands-on learning, incorporating kinetic and other learning styles into lessons, making learning “relevant,” and allowing children more self-direction and free movement—simply sound like traditional progressive pedagogy.³⁴

More recently, critics of the standards movement and its flagship federal legislation, the No Child Left Behind Act (NCLB), have argued that the movement and NCLB are to blame for boys’ problems. According to *Newsweek*, “In the last two decades, the education system has become obsessed with a quantifiable and narrowly defined kind of academic success, and that myopic view, these experts say, is harming boys.” This is unlikely, because high-school-age boys, who seem to be having the most problems, are affected far less by NCLB than elementary-school-age boys, who seem to be improving the most.

Further, many of the arguments NCLB critics make about how it hurts boys—by causing schools to narrow their curriculum or eliminate recess—are not borne out by the evidence. A recent report from the Washington, D.C.-based Center for Educational Policy showed that most schools are not eliminating social studies, science, and arts in response to NCLB.³⁵ And, a report from the U.S. Department of Education found that over 87 percent of elementary schools offer recess and most do so daily.³⁶ More important, such critics offer no compelling case for why standards and testing, if harmful, would have more of a negative impact on boys than on girls.

In other words, few of these commentators have anything new to say—the boy crisis has just given them a new opportunity to promote their old messages.

How Should Parents, Educators, and Policymakers Respond?

To be sure, there are good reasons to be concerned about boys—particularly low-income, urban, rural, and minority boys as well as those with disabilities. Whether or not our schools are to blame for causing these boys' problems, they need to do a better job of working to address them. In particular, the disproportionate number of boys being identified with learning and emotional disabilities, suspended from school, and dropping out suggests that what our schools are doing doesn't work very well for some boys. But with so much ideological baggage and so little real evidence influencing the public debate on boys' achievement, how are policymakers, educators, and parents to know what to do?

It's likely that there is at least a grain of truth in all the different explanations being offered. The boy industry would not have the success it does if its arguments did not, to some degree, resonate with the experiences of parents and educators. But the many questions left unanswered by the research on these issues—as well as the ideological agendas

of many participants in these discussions—make it difficult to draw practical conclusions about how to respond.

But there are several things parents, educators, and policymakers could and should do.

The first is to not panic. Boys' educational achievement is improving overall, some gender gaps are less significant than press reports make them out to be, and many boys are doing fine despite the averages.

Second, we need to realize that many areas in which we see boys struggling are connected to larger educational and social problems and are not just a function of gender. Fortunately, we know more about these larger problems—and some of the steps we can take to address them—than we do about gender gaps. Low-income, black, and Hispanic boys, in the aggregate, are not doing well. Focusing on closing these racial and economic achievement gaps would do more to help poor, black, and Hispanic boys than closing gender gaps, and it would also help girls in these groups.

Similarly, while boys seem to be doing pretty well in elementary school, their achievement in high school appears to be declining. But so is the achievement of high school girls. The past decade of school reform—in which we have seen elementary-school-age boys make a lot of progress—focused heavily on the elementary school years and particularly on building early literacy skills. But national policymakers have realized, in the past few years, that America's public high schools are also in need of significant reforms. It makes sense to expand these reforms—which should help both boys and girls to achieve—and see if they reverse high school boys' academic achievement declines and narrow gender gaps before we go too far down the boy-crisis road.

Educators, parents, and policymakers should therefore be skeptical of simplistic proposals aimed at fixing the boy crisis, such as expanding single-sex schooling, implementing gender-based instructional

techniques, or funding new federal programs aimed at improving boys' achievement. The close relation between the difficulties facing some boys and complex educational challenges such as racial and economic achievement gaps, high school reform, and special education suggests that silver-bullet approaches are unlikely to solve the problems facing many boys. Each of these ideas may have a modicum of merit, but there is little sound research evidence for their effectiveness.

In addition, we need to recognize the role that choices play in producing different educational outcomes for men and women. Although some achievement gaps emerge early and appear to have a developmental component, those about which we are the most worried occur later, when the choices young people make have a significant impact on their educational results. Over the past 25 years, economic opportunities for women have increased dramatically, but many require a bachelor's degree. Families and education systems have been very clear in conveying this message to young women and encouraging them to get the education they need to be economically successful. Less educated men, however, historically have more economic opportunities than less educated women, so their incentives to get a good education are not as strong as those facing women. Many jobs traditionally held by less educated men are disappearing, or now require more education than they did a generation ago, but boys may not understand this. We need to look carefully at the messages that pop culture, peer

culture, and the adults who are involved in young people's lives send to boys about the importance of education to their future opportunities, and make sure that these messages are conveying accurate information to young men about their economic opportunities and the education they need to take advantage of them.

Finally, policymakers should support and fund more research about differences in boys' and girls' achievement, brain development, and the culture of schools to help teachers and parents better understand why boys' achievement is not rising as fast as that of girls. Such research should include studies that use proper methodological and analytic tools to look into the cause of gender achievement gaps, as well as experimental evaluations of different approaches that seek to close them. To support research, policymakers should make sure that data systems are collecting quality information about boys' and girls' school experiences and academic achievement and men's and women's educational attainment and workforce outcomes. In addition, policymakers should fund research on some of the specific problems—learning disabilities, autism, and disciplinary or emotional problems—that disproportionately affect boys.

These steps can help establish a more reasonable conversation and lead to effective responses to the achievement problems facing some boys, without unfairly undermining the gains that girls have made in recent decades.

Endnotes

- ¹ *How Schools Shortchange Girls* (Washington, D.C.: American Association of University Women, 1992). http://www.aauw.org/research/girls_education/hssg.cfm.
- ² Adrienne Mand Lewin, "Can Boys Really Not Sit Still in School?" ABCnews.com, Jan. 26, 2006.
- ³ See Christina Hoff Sommers, *The War Against Boys* (New York: Simon & Schuster, 2000) and William Pollack, *Real Boys: Protecting Our Sons from the Myths of Boyhood* (New York: Random House, 1998).
- ⁴ Individual states also administer their own assessments, but none can be used to gauge long-term trends as well as the NAEP, nor do they offer the advantage of a national sample. Overall, differences between boys' and girls' performance on NAEP assessments match those found on state assessments—girls tend to do better than boys on tests of English/language arts, and boys tend to do slightly better in math.
- ⁵ Marianne Perie, Wendy S. Grigg, and Patricia L. Donahue, *The Nation's Report Card: Reading 2005* (Washington, D.C.: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2005). <http://nces.ed.gov/nationsreportcard/reading/>.
- ⁶ *Ibid.*
- ⁷ M. Perie, R. Moran, and A.D. Lutkus, *NAEP 2004 Trends in Academic Progress: Three Decades of Student Achievement in Reading and Mathematics* (Washington, D.C.: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2005). <http://nces.ed.gov/nationsreportcard/lt/results2004/>.
- ⁸ Marianne Perie, Wendy S. Grigg, and Gloria S. Dion, *The Nation's Report Card: Math 2005* (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 2005).
- ⁹ The main NAEP and long-term trend NAEP are different assessments, so it is not necessarily inconsistent that older boys' performance rose on the main NAEP from 1992 to 1996 while it did not rise on the long-term trend NAEP.
- ¹⁰ *2004 Trends in Academic Progress, op. cit.*; author analysis using NAEP data explorer. <http://nces.ed.gov/nationsreportcard/nde/>.
- ¹¹ Office of Special Education Programs, *25th Annual Report to Congress* (Washington, D.C.: U.S. Department of Education, 2003). <http://www.ed.gov/about/offices/list/osep/osep/research.html>; Centers for Disease Control and Prevention, "Mental Health in the United States: Prevalence of and Diagnosis and Medication Treatment for Attention Deficit/Hyperactivity Disorder—United States, 2003," *MMWR Weekly*, Sept. 2, 2005. <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5434a2.htm>.
- ¹² Catherine Freeman, *Trends in Educational Equity of Girls and Women* (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 2004). <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2005016>.
- ¹³ *Trends in Educational Equity of Girls and Women, op. cit.*
- ¹⁴ Office of Juvenile Justice and Delinquency Prevention, *Juvenile Offenders and Victims: 2006 National Report* (Washington, D.C.: U.S. Department of Justice, Office of Justice Programs, 2006). <http://ojjdp.ncjrs.org/ojstatbb/nr2006/index.html>.
- ¹⁵ Jay P. Greene and Marcus Winters, *Leaving Boys Behind: Public High School Graduation Rates* (Manhattan Institute, April 2006). http://www.manhattan-institute.org/html/cr_48.htm#05; research published by the Urban Institute reaches similar findings. See Christopher B. Swanson, *Who Graduates? Who Doesn't? A Statistical Portrait of Public High School Graduation 2001* (Washington, D.C.: The Urban Institute, 2003). <http://www.urban.org/publications/410934.html>.
- ¹⁶ *Trends in Educational Equity of Girls and Women: 2004, op. cit.*
- ¹⁷ As cited in *Trends in Educational Equity of Girls and Women: 2004, op. cit.* and Richard Whitmire, "Boy Trouble," *The New Republic*, Jan. 23, 2006.
- ¹⁸ *Trends in Educational Equity of Girls and Women: 2004, op. cit.*
- ¹⁹ *Trends in Educational Equity of Girls and Women: 2004, op. cit.*
- ²⁰ *2005 College-Bound Seniors: Total Group Profile Report* (New York: The College Board, August 2005). http://www.collegeboard.com/prod_downloads/about/news_info/cbsenior/yr2005/2005-college-bound-seniors.pdf. This report focuses on data from SAT exams administered before spring 2005, when a new SAT was launched that replaced the previous verbal section with critical reading and essay portions.
- ²¹ Diane Halpern, *Sex Differences in Cognitive Abilities* (Mahwah, N.J.: Lawrence Erlbaum Associates, 2000).
- ²² *Trends in Educational Equity of Girls and Women: 2004, op. cit.*

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- ²³ Katharin Peter and Laura Horn, *Gender Differences in Participation and Completion of Undergraduate Education and How They Have Changed Over Time* (Washington, D.C.: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, February 2005). <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2005169>.
- ²⁴ *Trends in Educational Equity of Girls and Women: 2004*, *op. cit.*
- ²⁵ *Ibid.*
- ²⁶ *Highlights of Women's Earnings in 2004* (Washington, D.C.: U.S. Department of Labor, U.S. Bureau of Labor Statistics, September 2005).
- ²⁷ *Trends in Educational Equity of Girls and Women: 2004*, *op. cit.*
- ²⁸ Many intelligence tests are deliberately designed to eliminate any "gender bias"—essentially to ensure that male and female averages are the same. But research by Arthur Jensen, using tests that were not specifically written to eliminate sex differences, also found no significant differences between male and female general intelligence. See Arthur R. Jensen, *The g Factor: The Science of Mental Ability* (New York: Praeger, 1998).
- ²⁹ Nicholas Zill and Jerry West, *Entering Kindergarten: A Portrait of American Children When They Begin School* (Washington, D.C.: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2000). <http://nces.ed.gov/pubs2001/2001035.pdf>.
- ³⁰ For a comprehensive summary of the evidence on gender differences in cognitive abilities, see Halpern, *op. cit.*
- ³¹ Halpern, *op. cit.*
- ³² Halpern, *op. cit.*; See Jay N. Giedd, F. Xavier Castellanos, Jagath C. Rajapakse, A. Catherine Vaituzis, and Judith L. Rapoport, "Sexual Dimorphism of the Developing Human Brain," *Progress in Neuropsychopharmacology and Biological Psychiatry*, 1997; Sarah Durston, Hilleke Hulshoff Pol, B.J. Casey, Jay N. Giedd, Jan K. Buitelaar, and Herman Van Engeland, "Anatomical MRI of the Developing Human Brain: What Have We Learned?" *Journal of the American Academy of Adolescent Psychiatry*, 40:9, September 2001.
- ³³ See, for example, Christina Hoff Sommers, *op. cit.*; Krista Kafer, "Boys Lag Behind But Extra Help Goes to Girls," *School Reform News*, Aug. 30, 2002; Mark Bauerlein and Sandra Stotsky, "Why Johnny Won't Read," *The Washington Post*, Jan. 25, 2005.
- ³⁴ See Michael Gurian, Patricia Henley, and Terry Trueman, *Boys and Girls Learn Differently* (Hoboken, N.J.: Jossey-Bass, 2001).
- ³⁵ Diane Stark Rentner, Caitlin Scott, Nancy Kober, Naomi Chudowsky, Victor Chudowsky, Scott Joftus, Dalia Zabala, *From the Capital to the Classroom: Year 4 of the No Child Left Behind Act* (Washington, D.C.: Center for Education Policy, 2006). <http://www.ctredpol.org/nclb/Year4/Press/>.
- ³⁶ Basmat Parsad and Laurie Lewis, *Calories In, Calories Out: Food and Exercise in Public Elementary Schools 2005* (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 2006). <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2006057>.