

Gender in Policy and Practice

PERSPECTIVES ON SINGLE-SEX
AND COEDUCATIONAL
SCHOOLING

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CHAPTER 3

Challenging the System: Assumptions and Data behind the Push for Single-Sex Schooling

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"It's kind of nice not to have guys here."

—FOURTEEN-YEAR-OLD STUDENT AT A GIRLS' SCHOOL
(WASHINGTON TIMES, JUNE 2, 1999)

The girls in the all-girls algebra class "are in a risk-free environment, supportive rather than competitive."

—CURRICULUM DIRECTOR (PHILADELPHIA INQUIRER, OCTOBER 14, 1998)

"If [my daughter] wants to be president of the country, who am I to ruin her chances by having her overshadowed by some boy?"

—MOTHER OF A KINDERGARTENER IN A GIRLS' SCHOOL
(NEW YORK TIMES, APRIL 11, 1999)

For decades, coeducation has been the norm for K-12 public education in the United States. Beginning in the 1980s, however, well-publicized reports that girls were being shortchanged in schools and that coeducation provides a "chilly climate" for women and girls (Bailey et al., 1992; Hall and Sandler, 1982) and popular books such as *Reviving Ophelia* (Pipher, 1994) and *Failing at Fairness* (Sadker and Sadker, 1994) began to refuel an interest in the education girls were receiving. The reports and books called for reducing the impact of gender bias and stereotyping in education and improving the education of girls and boys.

However, many who read about gender issues in schools and reflected on their own and their daughters' education appeared to conclude that healthy coeducation for girls was extremely difficult to achieve, and that single-sex education was a much more feasible solution. A 1998 survey of the National Coalition of Girls' Schools found applicants to their member schools increased by a third in the previous seven years, and enrollments increased by nearly a fifth (NCGS, 1998).

As part of this trend, new girls only schools have been established, including the Julia Morgan Middle School for Girls in Oakland, California, which opened its doors in 1999, the Young Women's Leadership Charter School in Chicago in 2000, and the Seattle Girls' School in 2001, the latter two focusing on math, science, and technology.

Underlying this increased interest in single-sex education for girls have been a variety of claims for the superiority of single-sex education over coeducation for girls. There are claims for girls' superior academic achievement, participation in math, science, and technology, happiness, and better careers resulting from the single-sex environment. Are the claims valid? This chapter casts a critical look at the assumptions and research behind the view of single-sex schooling as the answer to girls' educational problems. In so doing, we consider public and private schooling from kindergarten through college.

WHAT DO RESEARCHERS SAY?'

There has been no national comprehensive controlled study of academic performance for U.S. students in public and private K-12 single-sex and coed schooling. Such a study has been conducted, however, at the college level. Looking at U.S. colleges and universities, Astin (1993) found that whether a college was coed, single-sex female, or predominantly male² had no meaningful effect on a variety of areas including standardized measures of general knowledge, communication skills, or professional knowledge. Neither were there differences in terms of critical thinking, analytic or problem-solving skills, writing skills, foreign language skills, public speaking ability, job skills, or preparation for professional or graduate school.

Having a greater proportion of women administrators or faculty members in a college did have a positive impact on women's education (Astin, 1993), as did having a learning environment, which validated women's scholarship and women's issues (Sax, 1994). Indeed, such a positive learning environment had a stronger effect on women's achievement than having more women or a greater proportion of female students in a major (Sax, 1994).

At the precollege level in the United States, no work has been done with a nationally representative public school sample because there are very few public single-sex environments—either classes or schools, because of Title IX and other possible legal constraints.³ However, some studies examining individual schools or other single-sex educational environments have been done in the United States as well as in Australia and Great Britain. The results of these studies are not consistent. For example, in studies of achievement and continuation in math and science course taking, one study found no differences in girls' subsequent math and science course taking based on whether they have been in single-sex or coed classes (Wood, Bonnie, and Brown, 1997), whereas another found short-term but not long-term gain (Leder and Forgasz, 1994). No differences in grades or SAT scores between girls in sin-

gle-sex math classes and those in coed classes were reported by some researchers (Gilson, 1999; Wood, Bonnie, and Brown, 1997), while other researchers found single-sex groupings had little effect on the achievement scores of either males or females (Leder and Forgasz, 1994; Parker, 1985). Still another study (Smith, 1986) identified short-term but not long-term achievement gains for girls in single-sex classes over girls in coed classes (Campbell and Wahl, 1998b).

Using national data sets, there has been research done across representative samples of Catholic and other private schools in the United States, where there are enough single-sex institutions to make the analysis valid. Using a national sample of Catholic schools, studies done by Valerie Lee and her colleagues (Lee and Bryk, 1986, 1989; Lee and Marks, 1990) documented benefits for girls in single-sex schooling, but generally found few differences in the relative benefits of single-sex and coeducational schooling for boys (Lee, 1998, p. 43). LePore and Warren (1996), however, found that single-sex Catholic secondary schools were not particularly advantageous academic settings compared to coed Catholic secondary schools and that the few observed advantages of attending Catholic single-sex schools benefited boys more than girls.

When Lee and her colleagues replicated her work on Catholic secondary schools using a national sample of independent (private, not Catholic) high schools (Lee and Marks, 1992; Lee, Marks, and Byrd, 1994), they found "no consistent pattern of effects for attending either single-sex or coeducational independent schools for either girls or boys" (Lee, 1998, p. 43). Based on his earlier work on Catholic secondary schools, Riordan (1990) concluded that the relative impact of single-sex and coeducational schools was "virtually zero for middle-class or otherwise advantaged students" but was significant for at-risk students, although these effects are "small in comparison with the much larger effects of home background and type of curriculum in a given school" (Riordan, 1998, p. 54).

Riordan's conclusion about the size of the effect owing to the single-sex versus coed nature of the school points out a problem with much of the research on single-sex education and provides one explanation as to why the results are inconsistent. Many of the studies of single-sex education do not control for such important variables as the curriculum, student self-selection, or even the teacher. For example, when single-sex classes taught by one or more teachers are compared to coed classes taught by different teachers, there is no way of telling what proportion of any difference found is owing to the teacher and how much results from the sex composition of the class. This is an especially important caveat in view of the research on the importance of the teacher's role in the classroom, and how much the quality and experience of teachers is related to their students' achievement (Wenglinsky, 2000).

The content, practice, and organization of an educational setting matter greatly when student achievement is being assessed, as do the climate and

culture; therefore, it is curious that these factors have been secondary considerations in the research when they have been addressed at all. Yet too much of the literature and discussion compares schools providing different levels of content and pedagogy, and yet concludes that differences result from the schools' sex composition (Campbell and Wahl, 1998a).

As the U.S. Department of Education's 1993 special report on single-sex schools reminded readers that "all single-gender schools are not equal in providing a productive learning environment and many factors contributing to the success to effective single-gender schools are fundamental to effective schools regardless of their gender policy—a small student body, strong emphasis on academics and commitment to the schools' mission and value" (Hollinger, 1993, p. 11). Gill agrees, feeling that

[a]ll of the research around the topic of single-sex schooling compared with coeducation skirts some highly significant issues to do with what actually happens in one or the other type of schooling. The issue of gender difference in learning outcomes appears more as a question of classroom treatments and teacher expertise than of school gender context per se. (1996, p. 16)

As Campbell and Wahl pointed out:

While the question "Are single-sex classes better than coed classes?" may sound logical, it makes little sense when there is no consideration of what goes on in the classes, the pedagogy and practices of the teachers, or anything about the students other than their sex. Yet the public, media, educators, and even some researchers compare classes and attribute outcomes to this single factor of whether the class is all girls, all boys, or girls and boys together. Imagine how parents would respond if asked if they would prefer that their child attend a good single-sex math class or a bad coed math class, versus a bad single-sex math class or a good coed one. Basically, single-sex schooling and coeducational schooling can each be highly effective, ineffective, or somewhere in the middle. (1998b, p. 63)

That said, there can be much to learn from highly effective all-girl schools, at least in terms of girls' attitudes toward schooling. In a survey of over four thousand graduates of girls' schools in the United States (National Coalition of Girls' Schools, 2000), 85 percent rated their schools as very good or excellent. Something positive is going on there and it would be worth our while to learn what that might be.

WHAT DEFINES SINGLE-SEX SCHOOLING?

The degree to which confounding variables are accounted for is one reason for unclear and often contradictory results in research on single-sex education, but another equally important reason is that although we may think we know what the phrase "single-sex schooling" means, the phrase signifies several mutually contradictory things to different people.

"Single-sex schooling has been seen, simultaneously, as both conservative and progressive, and as both oppressive and empowering" (Parker and Rennie, 1996, p. 1). Supporting single-sex education are conservatives such as columnists John Leo and George Will, educators such as Diane Ravitch and even the *Wall Street Journal*. Also supporting it are feminists and feminist organizations such as columnist and lawyer Susan Estrich, researcher Catherine Krupnick, and Girls Incorporated.

Feminists supporting single-sex schooling often see it as the best means for girls and boys to achieve equal educational outcomes and find it an appropriate response to perceived different learning styles and maturation rates of boys and girls. They also feel it can provide young people with an environment free from the distractions and harassment often posed by the presence of the opposite sex. Conservatives, meanwhile, often support single-sex education as the best strategy for maintaining essential differences between girls and boys. To them, education should be linked to preserving different roles based on gender (Campbell and Wahl, 1998a; Parker and Rennie, 1996).⁴

The range of definitions of and justifications for single-sex education should not be surprising. Traditionally, single-sex environments have been established for a variety of reasons, ranging from ultrafeminist to ultraconservative. Some colleges, such as Smith College and Mount Holyoke College, were established with the specific mission of empowering women and advancing their careers, and they continue to adhere to this mission. Many of the newly established all-girls grade schools have also been set up with overtly feminist missions.

We must not forget, though, that other single-sex environments have been established with quite different goals in mind. Some, such as some women's clubs and societies, were established with educational, political, social, health, and/or special interest (e.g., gardening) goals and do not deal with gender issues. Other single-sex organizations, such as ladies' auxiliaries, have as their goal the support of their men's activities. Still other all-female environments, such as purdah, have as their goal to keep women "pure" and guard men from "temptation" by keeping women separate and secluded.

That single-sex environments, particularly single-sex education, can mean different things to different people is emphasized by the recent experience of California's single-sex academies. In 1997, the State of California funded six pairs of public single-sex schools, intended as "magnet schools for at-risk students" (Bennett, 1997). To address legal concerns, particularly those raised by Title IX, each pair of schools was required to offer the same resources and opportunities to students. In a recent report, Datnow and her colleagues learned, based on hundreds of interviews with people involved in the academies, that participation in single-sex schooling was not a means to either a feminist or conservative education, but was for most administrators

a source of available cash for the purpose of “meeting at-risk students’ needs” (Datnow, Hubbard, and Woody, 2001, p. 5). There was no attention to gender bias and teachers did not receive professional development on gender-equitable educational practices. As a perhaps predictable result, “traditional gender stereotypes were often reinforced” (Datnow, Hubbard, and Woody, 2001, p. 7).

It may just be, as Heather Johnson Nicholson has pointed out, that “whether a separate, or single-sex, setting for girls is especially positive for girls or promotes gender equity depends very much on the environment, values and relationships established there” (1992, p. 42).

WHY IS SINGLE-SEX SCHOOLING SO OFTEN SEEN AS THE ANSWER?

With ambiguous and contradictory research results about single-sex and coeducational schooling, increasing acknowledgment of the many variables that have an impact on girls’ and boys’ educational experiences and the variety of often conflicting goals for single-sex education, the question now becomes: “Why is single-sex schooling so often seen as the answer?” The following provides an overview of some of the answers to that question as well as an exploration of related research and justifications for each.

Assumption #1: Girls and boys are viewed as having different skills, interests, and learning styles; thus, they are better served by single-sex schooling.

This rationale for single-sex education is popular but not accurate. Most of us—educators or not—tend to assume that girls and boys are different, that they are indeed “opposite sexes.”⁵ In this dichotomous view we see girls as one way, boys as another, as in “boys are competitive, girls are cooperative.” There is great diversity among girls and boys. Indeed, other than primary sex characteristics, differences *within* girls as a group and within boys as a group are much, much larger than differences *between* girls as a group and boys as a group⁶ (Maccoby and Jacklin, 1974; Willingham and Cole, 1997). “Knowing that a person is female does not tell us if her athletic ability is closer to the Williams sisters or a couch potato. Knowing that a person is male tells us nothing about whether his math skills reflect those of an Einstein or a ‘mathphobe’” (Sanders and Campbell, 2001).

Researchers have known for many years that the differences among boys and among girls are far greater than any differences between an “average” girl and an “average” boy (Bailey et al., 1992; Willingham and Cole, 1997). Analyses of thousands of studies have found that gender differences in cognitive and affective areas are actually quite small. For example, the degree of overlap in girls’ and boys’ math skills has been found to be between 98 and 99 percent, whereas in verbal skills the degree of overlap has been found to

be about 96 percent (Hyde, Fennema, and Lamon, 1990; Hyde and Linn, 1988). As the press release headlined about a recent book on gender and assessment, there are “more gender similarities than differences in educational performance” (Educational Testing Service, 1997, p. 1). There are many boys who learn better in the cooperative, relational styles commonly associated with girls, and many girls who learn better in the competitive individualistic style often associated with boys (Campbell and Wahl, 1998a).

Assumption #2: Our efforts to reduce the gender gaps in subjects such as math and science, or in promoting coed environments that serve both boys and girls, have not been successful. Thus, single-sex classes are the only option left for addressing the inequities.

In the past twenty years there have been major advances in girls’ math and science achievement and course taking. There are now minimal differences in girls’ and boys’ average science and math scores on the fourth-, eighth-, and twelfth-grade National Assessment of Educational Progress tests (NAEP) (National Science Foundation, 1999). Girls are now taking upper-level math and science courses needed to enter college majors in these areas in about the same numbers as boys. Today, over 40 percent of high-school physics and calculus students are girls; although girls remain dramatically underrepresented in Advanced Placement Physics and Computer Science courses (American College Testing, 1998; National Science Foundation, 1999).

Women have the ability and the basic academic background needed to continue on in science, engineering, and technology equal to men but they are not going into those fields in anywhere near the numbers men are (National Science Foundation, 2000; Thom, 2001). For many girls, *interest* in these areas is not there. By eighth grade, in all racial and ethnic groups, twice as many boys as girls say they are interested in careers in the physical sciences, engineering, and technology. Girls were found to have less interest in math than boys and less confidence in their math abilities, even though they do not lag behind boys in grades or test scores (Catsambis, 1995).⁷

Studies of graduates of women’s colleges found these students were more likely than women from coed colleges to continue on in the natural sciences (Tidball and Kistiakowsky, 1976). However, reanalysis of those data, controlling for variables such as socioeconomic status, found that attending a women’s college had minimal impact on whether a female student continued on in the sciences (Cosby et al., 1994). Other studies carried out on women students enrolled in college after Title IX was implemented, when almost all colleges and universities were open to women, have tended not to find career differences between women in women’s colleges and those in coed colleges (Astin, 1993), although Riordan (1992) found women from women’s colleges more apt to be in “higher prestige jobs.”

It is instructive to see what happened when a private boys’ school and a

private girls' school in the western United States both recently decided to go coed but remain separate. Before coeducation, the girls' school offered a variety of mathematics courses at the lower end of the curriculum, whereas the boys' school offered more upper-division mathematics. As the authors explained, after coeducation the faculty members of the boys' school "did not change the academic or the extra-curricular programs when females entered the school because they believed they already had the best curriculum." However, as males entered Grove High School (a pseudonym for the former girls' school) "many changes occurred in the academic programs, curriculum, and extra-curricular offerings." Grove administrators even changed its name, originally St. Theresa of the Grove (again a pseudonym), because it was felt that such a feminine name would not be attractive to boys. "As a school originally designed for girls, Grove was *not* good enough for boys." (Brody et al., 2000, pp. 88-89 and 100. Emphasis in the original.)

Coeducation has successfully reduced gender gaps in math and science achievement and course participation but not in interest in the subjects or continuation into related careers. However, it is not clear that single-sex education would do any better.

Assumption #3: Single-sex schooling provides girls with leadership opportunities they would not get in coed environments.

All-girl schools are seen as guaranteeing leadership opportunities that are presumed to go to males in coed schools. There are some data to support this assumption. In coed schools many more girls than boys *participate* in student government and most other extracurricular activities, with the exception of athletics (Dwyer and Johnson, 1997; National Center for Education Statistics, 2000, table 147).

However, the pattern is different when it comes to *leadership positions* in these activities. Even though girls are much more likely to be in honor societies, music groups, service organizations, and academic groups (e.g., art, computer, debate), boys are somewhat more apt to be in leadership positions within the organizations. Girls are more apt to be in leadership positions in literary activities (e.g., yearbook, newspaper) and slightly more apt to be leaders in career groups (e.g., future teachers, future farmers) and student government (Dwyer and Johnson, 1997). Leadership opportunities are apparently opening up to girls in coed schools.

Assumption #4: Single-sex schooling is not about money; money is spent equally on girls' and boys' schools.

Money and the resources it buys have always been an issue in single-sex education. "Separate but equal" has always been a myth in American education.

At the college level, the lack of equitable or equivalent resources between the all-male and the all-female colleges was a major reason for the United States Supreme Court's decision that women must be admitted into the Virginia Military Academy (VMI) (United States, 1997). Expert witness analysis of VMI and its sister school, Mary Baldwin College, and of the Citadel in South Carolina and its sister school, Converse College, by the first coauthor, found major differences in the all-male and all-female institutions. The men of VMI and the Citadel had many more resources and hence opportunities than did the women of Mary Baldwin and Converse, including more sports, athletic facilities, academic majors, computers, and even library books. The resources and opportunities that were offered were stereotyped, as well as unequal. For example, the Citadel offered degrees in engineering and had a sports stadium seating over 22,000 people. Converse offered degrees in music and art and had a concert hall seating fifteen hundred (Campbell, 1995). Such differences are not limited to these four schools. Smith College recently became the first and still the only women's college in the country to have an engineering department and offer an engineering degree (Smith College, 2000).

There are similar examples at the precollege level. For example, research on single-sex Catholic schools found that per-pupil expenditures at boys' schools were 25 percent higher than those at girls' schools, and 30 percent higher than those at coed schools (Riordan, 1990, p. 63).

Money is an issue in other ways as well. All-girl classes in coed schools can be a "cheap fix." Using existing teachers and resources incurs little if any costs but shows that schools and administrators are doing something about the "girl problem" in math and the sciences. Money can also be a motivation, as it was in the California public school single-sex experiment mentioned in the preceding, where some of the districts that applied were motivated by the money rather than a belief in the value of single-sex education (Datnow, Hubbard, and Woody, 2001). As in so many other areas, money is an issue in single-sex schooling.

Assumption #5: Nothing can be done to stop boys from disrespecting girls and creating a difficult environment, so girls are safer and more comfortable in single-sex schools.

Studies have found that boys are more apt to cause classroom disruptions than girls, and also that boys receive both more negative and more positive attention in classrooms (Bailey et al., 1992). Indeed, one study found that teachers were surprised at the extent to which the dominant and harassing behavior of boys was impeding girls' educational progress (Parker and Rennie, 1996). However, it has also been found that girls were not the only ones whose education was negatively affected. The same study found that although girls in single-sex classes received the least harassment from other

students, boys in single-sex classes received the most (Parker and Rennie, 1996).

Moreover, sexism occurs in all forms of schooling—single-sex female, single-sex male, and coed. Although the quantity of sexist incidents (comments and behaviors) across different types of schools were the same, the types were different. In the single-sex female schools, sexist incidents were more apt to be in the form of allowing and/or reinforcing gender stereotypes by encouraging dependent behavior by girls and by less-than-rigorous instruction. Sexist incidents of explicit sexuality, defined as “the treatment of males or females as sexual objects,” were found only in all-boys’ schools; and the most prevalent form of sexism in coed schools was boys’ domination of girls (Lee, Marks, and Byrd, 1994, pp. 103–104).

As a number of reports have noted, including AAUW’s 1993 *Hostile Hallways* and its 2001 update, the hallways and classrooms of many of our schools are hostile to girls *and* boys. The obvious difficulty with sex segregation as a solution to this hostility is that the *real* problems are simply avoided. A teacher who permits a student to ridicule another student on the basis of sex or any other characteristic is actively preventing not only the second student from learning but also intimidates other students. Many of the problems we attribute to students are actually teachers’ failures to control the learning environment in their classrooms.

By removing the girls rather than dealing with the issues of classroom misbehavior and disrespect that are creating the problem in the first place, we are assuming a stereotyped view of girls as gentle, weak creatures who cannot handle the rough environment of the real world. Moreover, we are implicitly accepting these beliefs:

- Boys’ behavior is naturally incorrigible.
- The acceptable standard of classroom behavior is set by the most aggressive boys.
- It is acceptable for aggressive boys to prey on weaker boys and disrupt their learning.
- The appropriate female response to male aggression is not to fight back or to go to an authority, but to leave; that appropriate “girl behavior” is to be passive.

Assumption #6: Sexual tension between girls and boys and the desire to impress each other is a distraction to learning that can be eliminated by single-sex schooling.

Separating girls and boys is seen as a way of reducing sexual distraction; however, for homosexual and bisexual youth, single-sex education hardly eliminates sexual tensions. The assumption that it does denies the existence of these youth and ignores their stresses. Moreover, aggressions in all-boy

schools are particularly an issue for boys who do not fit the ideal masculine stereotype (Datnow, Hubbard, and Woody, 2001).

It is true that in many coed middle school and high school classes, students and teachers report that girls distract boys and boys distract girls. It is felt that girls are discouraged from speaking up and taking initiative because they are concerned about appearing either stupid to the boys, or on the contrary, too smart. Boys are felt to act up more than they otherwise would in order to impress girls (Durost, 1996; Parker and Rennie, 1996). We cannot assume that all classroom tensions and distractions are sexual. Girls want to impress each other too, and the same goes for boys. And everyone wants to impress the most popular students. Gangs, cliques, even clothing all create distractions. Indeed, student uniforms are also touted as a way of decreasing distractions.

As indicated, the obvious difficulty with sex segregation as a solution to classroom climate issues, whether they are student misbehavior or student distractions, is that the *real* problems are behavioral and controllable. As adults and educators, it is our responsibility to create a school climate that is safe and appropriate for girls and boys, gays, lesbians, bisexuals, straights, African Americans, Asian Americans, Hispanic Americans, Native Americans, and whites. “School is a place where everyone can learn” must be more than a slogan.

One reason for teachers’ failure to ensure respect in the classroom is the failure of the teacher education establishment and the education profession as a whole to emphasize the role of gender in learning (Sanders, 1997; Sanders and Campbell, 2001). Teachers who do not understand gender issues are ill-prepared to deal with those issues in their classes.

Assumption #7: The existence of single-sex schooling for few girls does no harm to coed education for the many.

A major reason for the existence of girls’ schools is in response to the well-documented failures of coeducation to provide an equitable learning environment (Bailey et al., 1992; Tyack and Hansot, 1990). An unintended result of single-sex schooling as a solution to girls’ education dilemmas can be to serve as a pressure valve to release coeducation to deal with gender issues in education. Parents who are concerned enough about the quality of education their daughters are receiving to place them in girls’ schools are no longer available to exert equity pressure on their neighborhood coed public schools. In the best of educational situations, parents are actively involved in their children’s educations, but only in those schools their children attend. When they take their daughters out of the neighborhood school, that school loses access to the parents’ voice and influence on the issue that concerns them so greatly: the education of girls. In the same way, coed public schools

that choose to set up single-sex math or science classes—and the number of such schools that have done and are doing this is not negligible—are essentially removing any incentive for their normal math and science classes to change.

Assumption #8: Single-sex schooling provides girls with the best education.

Before we can even begin to determine if single-sex schooling has the potential to provide girls with the best education, we must first attempt to answer these questions:

- What is a good education?
- Does a good education differ for girls and boys?
- Do *all* girls and *all* boys need different things to get a good education?
- Does a good education differ if it is within a single-sex male, single-sex female, or coeducational environment?

We as educators and feminists have thought long and hard about these questions and have our own answers. Our goals for education center around the ability of students, both female and male, to develop the skills and capacity to control their own lives and develop compassion and concern for others, along with the skills and capacity to take action on that compassion and concern. We believe that individuals need different things in order to receive that good education; however, to define what students need based on group membership rather than individual characteristics is inappropriate as well as inaccurate.

We also believe that these questions must be answered individually and collectively by educators and others. Unless it is clear what a good education is, it makes little sense to design and implement strategies to move us toward a good education. It is clear to us that few definitions of good education would be achieved by simply separating girls and boys.

CONCLUSION

It is a disservice to frame the current discussion about the efficacy of single-sex education and coeducation as an either/or debate, with individuals on one side or the other. The debate needs to be reshaped into a thoughtful conversation, with an acknowledgment that our shared goal is schooling that fully educates *each* girl and *each* boy. That job is far from done, and that is where we need to dedicate our efforts (Campbell and Wahl, 1998a).

There is a parable about babies in the river.

Once upon a time there were three people walking next to the Hudson River. Looking over, they saw the river was full of babies. One of the three jumped into the river and started throwing babies out to the shore; the second jumped into the

river and started teaching the babies to swim while the third started running upstream. “What are you doing?” cried the two in the water to the third. “There are babies drowning in the river!” “I know,” said the third, “I’m going to find out who’s throwing babies into the river and make them stop.” (Campbell and Hoey, 1999)

To save all the babies we need to focus on what is needed to make the coeducational classroom fully equitable, promoting excellent outcomes for both girls and boys, in environments of high expectations. Well-funded, small-scale efforts in single-sex or coed schools will help save some babies, one by one, and even teach a few to swim. But without our best efforts directed toward *all* forms of education—coed, single-sex, private, public, home-schooled—the babies will keep coming down the river. We should be able to do better than this.

NOTES

1. This is in no way intended to be a comprehensive look at the research. More comprehensive examinations can be found in, for example, Haag (1998) and Levit (1999).
2. Because there are so few single-sex male colleges and universities, Astin (1993) included institutions whose enrollment was 90 percent or more male as predominantly male.
3. The United States General Accounting Office (1996, pp. 6–7) concluded in a report to the U.S. House of Representatives that restricting enrollment in a public school by sex violated Title IX of the Education Amendments of 1972, and may also violate the equal protection clauses of the U.S. constitution and different state constitutions.
4. It should be noted that there is a similar range in the political beliefs of those who support coeducation. Some support coeducation because boys benefit from the purported “civilizing influence” that girls bring to the classroom but still receive the larger share of resources and attention (Gill, 1996, p. 3). Others see coeducation as offering the best hope for reframing schooling so that it is not determined by gender (Gill, 1996, p. 5), whereas still others are concerned that prolonged exposure to single-sex education can lead to a “deficit approach” to girls’ education, implying that girls are lacking in some ways compared to boys (Campbell and Wahl, 1998a).
5. If we are to understand girls and boys, we must look at the complexities of who they are, which includes their sex but is not limited to it. Race/ethnicity, poverty level, and disability are just three of the demographic characteristics that interact with a child’s sex to influence his or her life.
6. Darrell Huff’s 1954 *How to Lie with Statistics* (New York: W. W. Norton) provides an informative and entertaining overview of the problems with using “average” differences.
7. This argument is adapted from Campbell, P. B., and Hoey, L. (1999). *Saving Babies and the Future of SMET in America*. Washington, D.C.: United States Congress’s Commission on the Advancement of Women and Minorities in Science, Engineering, and Technology Development (CAWMSET).

REFERENCES

The authors of this chapter chose to include entire first names, counter to standard academic style of first and middle initials only, to provide information on the sex of the authors and ensure that authors’ sex is not presumed male by default.

- American Association of University Women (AAUW). (1993). *Hostile Hallways: AAUW’s Survey on Sexual Harassment in America’s Schools*. Washington, D.C.: The American Association of University Women Educational Foundation.
- American College Testing. (1998). *Are America’s Students Taking More Science and Mathematics Course Work?* ACT Research Report Series 98.2 [online]. Available: <http://www.act.org/research/briefs/98-2.html>

- Astin, Alexander. (1993). *What Matters in College: Four Critical Years Revisited*. San Francisco: Jossey Bass.
- Bailey, Susan; Burbidge, Lynn; Campbell, Patricia B.; Jackson, Barbara; Marx, Fern; and McIntosh, Peggy. (1992). *The AAUW Report: How Schools Shortchange Girls*. Washington, D.C.: AAUW Educational Foundation and National Education Association.
- Bennett, Susan M. (1997). "California's Single-Gender Academies Pilot Program." Paper presented at the National Dropout Prevention Conference, New Orleans.
- Brody, Celeste M.; Fuller, Kasi Allen; Gosetti, Penny Poplin; Moscato, Susan, and Nagel, Nancy Gail. (2000). *Gender Consciousness and Privilege*. New York: Falmer Press.
- Campbell, Patricia B. (1995). "A Comparison of the Citadel and VMI to Converse College and Mary Baldwin." Unpublished manuscript.
- Campbell, Patricia B. and Hoey, Lesli. (1999). *Saving Babies and the Future of SMET in America*. Washington, D.C.: United States Congress' Commission on the Advancement of Women and Minorities in Science, Engineering, and Technology Development.
- Campbell, Patricia B., and Wahl, Ellen. (1998a). "Of Two Minds: Single-Sex Education, Coeducation, and the Search for Gender Equity in K-12 Public Schooling." *New York Law School Journal of Human Rights* XIV(1), 289-310.
- . (1998b) "What's Sex Got to Do with It? Simplistic Questions, Complex Answers." In *Separated by Sex: A Critical Look at Single-Sex Education for Girls*. Washington, D.C.: AAUW Educational Foundation, pp. 63-74.
- Catsambis, Sophia (1995). "Gender, Race, Ethnicity, and Science Education in the Middle Grades." *Journal of Research in Science Teaching* 32(3): 243-257.
- Cosby, Faye, Alen, B., Culbertson, T., Wally, C., Monty, J., Hall, R., and Nures, S. (1994). "Taking Selectivity into Account: How Much Does Gender Composition Matter? A Reanalysis of M.E. Tidball's Research." *NWSA Journal* 6: 107-111.
- Datnow, Amanda; Hubbard, Lea; and Woody, Elisabeth. (2001). "Is Single-Gender Schooling Viable in the Public Sector? Lessons from California's Pilot Program." Toronto: Ontario Institute for Studies in Education.
- Durost, Richard A. (1996). "Single-Sex Math Classes: What and for Whom? One School's Experiences." *NASSP Bulletin* (February, 27-31).
- Dwyer, Carole, and Johnson, Linda M. (1997). "Grades, Accomplishments and Correlates." In Warren Willingham and Nancy Cole (Eds.), *Gender and Fair Assessment*. Englewood, NJ: Lawrence Erlbaum Press.
- Educational Testing Service. (May 6, 1997). "ETS Study Finds More Gender Similarities than Differences in Educational Performance." Princeton, NJ: Educational Testing Service.
- Gill, Judith. (1996). "Different Contexts: Similar Outcomes." A paper presented to the annual meeting of the American Educational Research Association, New York.
- Gilson, Judith E. (1999). "Single-Gender Education Versus Coeducation for Girls: A Study of Mathematics Achievement and Attitudes toward Mathematics of Middle-School Students." Paper presented at the annual meeting of the American Educational Research Association, Montreal.
- Haag, Pamela. (1998). "Single-Sex Education in Grades K-12. What Does the Research Tell Us?" In *Separated by Sex: A Critical Look at Single-Sex Education for Girls*. Washington, D.C.: AAUW Educational Foundation.
- Hall, Roberta M. and Sandler, Bernice R. (1982). *The Classroom Climate: A Chilly One for Women?* Washington, D.C.: Association of American Colleges.
- Hollinger, Debra K. (1993). *Single-Sex Schooling: Perspectives from Practice and Research*. Vol. I and II. *Special Report*. Washington, D.C.: Office of Educational Research and Improvement, U.S. Department of Education.
- Huff, Darrell. (1954). *How to Lie with Statistics*. New York: W. W. Norton and Company.
- Hyde, Janet S.; Fennema, Elizabeth; and Lamon, Susan J. (1990). "Gender Differences in Mathematics Performance: A Meta-Analysis." *Psychological Bulletin* 107(2): 139-155.
- Hyde, Janet S. and Linn, Marcia. (1988). "Gender Differences in Verbal Ability: A Meta-Analysis" *Psychological Bulletin* 104: 53-69.
- Leder, Gilah; and Forgasz, Helen. (1994). "Single-Sex Mathematics Classes in a Coeducational Setting." Paper presented to the annual meeting of the American Educational Research Association, Chicago.
- Lee, Valerie. (1998). "Is Single-Sex Schooling a Solution to the Problem of Gender Inequity?" In *Separated by Sex: A Critical Look at Single-Sex Education for Girls*. Washington, D.C.: AAUW Educational Foundation, 41-52.
- Lee, Valerie E., and Bryk, Anthony S. (1989). "Effects of Single-Sex Schools: Response to Marsh." *Journal of Educational Psychology* 81(4): 647-650.
- . (1986). "Effects of Single-Sex Secondary Schools on Student Achievement and Attitudes." *Journal of Educational Psychology* 78(5): 381-395.
- Lee, Valerie E.; and Marks, Helen M. (1990). "Sustained Effects of the Single-Sex Secondary School Experience on Attitudes, Behaviors, and Values in College." *Journal of Educational Psychology* 82(3): 578-592.
- . (1992). "Who Goes Where? Choice of Single-Sex and Coeducational Independent Secondary Schools." *Sociology of Education* 65: 226-253.
- Lee, Valerie E.; Marks, Helen M.; and Byrd, Tina. (1994). "Sexism in Single-Sex and Coeducational Independent Secondary School Classrooms." *Sociology of Education* 67: 92-120.
- LePore, Paul C.; and Warren, Robert (1996). "The Advantages of Single-Sex Catholic Secondary Schooling: Selection Effects, School Effects, or 'Much Ado About Nothing?'" Paper presented at the annual meeting of the American Educational Research Association, New York.
- Levit, Nancy. (1999). "Separating Equals: Educational Research and the Long-Term Consequences of Sex Segregation." *The George Washington Law Review* 67(3): 451-526.
- Maccoby, Eleanor E., and Jacklin, Carol. (1974). *The Psychology of Sex Differences*. Stanford, CA: Stanford University Press.
- National Center for Education Statistics. (2000). *The Digest of Education Statistics, 1999*. Washington, D.C.: U.S. Department of Education, NCES 2000-031.
- National Coalition of Girls' Schools. (2000). *Girls' Schools Alumnae Research: Executive Summary*. Concord, MA: Author.
- . (November 1998). "Parents, Students Opting for All-Girl Education: Rising Enrollment Shows Girls' Schools in Renaissance." <http://www.ncgs.org/Pages/news.htm#>
- National Science Foundation. (2000). *Women, Minorities and People with Disabilities in Science and Engineering 2000*. Arlington, VA: Author (NSF 00-327).
- . (1999). *Women, Minorities and People with Disabilities in Science and Engineering 1998*. Arlington, VA: Author (NSF 99-97).
- Nicholson, Heather Johnson. (1992). "Gender Issues in Youth Development Programs." Washington, D.C.: Carnegie Council on Adolescent Development.
- Parker, Leslie. (1985). *A Strategy for Optimizing the Success of Girls in Mathematics: Report of a Project of National Significance*. Canberra: Commonwealth Schools Commission.
- Parker, Leslie, and Rennie, Leonie. (1996). "Single-Sex Grouping: Issues for School Administrators." Paper presented at the American Educational Research Association annual meeting, New York.
- Pipher, Susan. (1994). *Reviving Ophelia: Saving the Selves of Adolescent Girls*. New York: Grosset/Putnam.
- Riordan, Cornelius. (1998). "The Future of Single-Sex Schools." In *Separated by Sex: A Critical Look at Single-Sex Education for Girls*. Washington, D.C.: AAUW Educational Foundation, 53-62.
- . (1992). "Single and Mixed Gender Colleges for Women: Educational Attitudes and Occupational Outcomes." *Review of Higher Education* 327: 336-345.
- . (1990). *Girls and Boys in School: Together or Separate?* New York: Teachers College Press.
- Sadker, M. and Sadker, D. (1994). *Failing at Fairness: How American Schools Treat Girls*. New York: Touchstone Press.
- Sanders, Jo. (1997). "Teacher Education and Gender Equity." *ERIC Digest* 96(3).
- Sanders, Jo; and Campbell, Patricia B. (2001, May). "Making It Happen: The Role of Teacher Education in Ensuring Gender Equity." *Policy Perspectives*. American Association of Colleges for Teacher Education, Vol. 2, No. 4, 1-5.

- Sax, Linda. (1994). "Challenging Tokenism: The Impact of Major Sex-Composition on College Student Achievement." A paper presented to the annual meeting of the American Educational Research Association, New Orleans.
- Smith College. (2000). News from Smith College: <http://www.smith.edu/newsoffice/Releases/00-094.html>
- Smith, S. (1986). *Separate Tables? An Investigation into Single-Sex Settings in Mathematics*. London: Her Majesty's Stationery Office.
- Thom, Mary. (2001). *Balancing the Equation: Where Are the Girls in Science, Engineering and Technology?* New York: National Council on Research on Women.
- Tidball, Elizabeth; and Kistiakowsky, Vera. (1976). "Baccalaureate Origins of American Scientists and Scholars." *Science*: 646, 648, 652.
- Tyack, David.; and Hansot, Elizabeth. (1990). *Learning Together: A History of Coeducation in American Schools*. New Haven: Yale University Press.
- United States General Accounting Office. (1996). *Public Education Issues Involving Single-Gender Schools and Programs: A Report to the Chairman, Committee on the Budget*. House of Representatives GAO/HEHS, 96-122. Washington, D.C.: General Accounting Office.
- United States vs. Virginia et al.* Nos. 94-1941 and 94-2107, 1997.
- Wenglinsky, Harold. (2000). *How Teaching Matters: Bringing the Classroom Back into Discussions of Teacher Quality*. Princeton, NJ: Educational Testing Service.
- Willingham, Warren, and Cole, Nancy. (1997). *Gender and Fair Assessment*. Englewood, NJ: Lawrence Erlbaum Press.
- Wood, Bonnie S.; and Brown, Lorrie A. (1997). "Participation in an All-Female Algebra I Class: Effects on High School Math and Science Course Selection." *Journal of Women and Minorities in Science and Engineering* 3(4): 265-278.