

Single-Sex and Coeducational Schooling: Relationships to Socioemotional and Academic Development

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The role of coeducation versus separate-sex schooling in the academic, socioemotional, interpersonal, and career development of adolescents is discussed. Arguments and research support for both types of schooling are reviewed. Separate-sex schooling seems to provide potential academic and attitudinal benefits for at least some students. The limitations of current research are discussed, and directions for further research are offered.

Recent events have propelled the issue of single-sex (SS) versus coeducational (CE) schooling into the public consciousness. These include a focus in the popular press on the threatened closing of some women's colleges, debates at some women's colleges about the desirability of becoming coeducational, attempts to fashion single-sex classrooms for young inner-city males, and the effort to compel all-male military institutions such as the Citadel and the Virginia Military Institute (VMI) to admit women (Clemente et al., 1994; Masters, 1992; McGowan, 1991; Seligman, 1993; Tifft, 1990a). In the process of justifying their positions, advocates and attorneys favoring various positions in these controversies have used bits and pieces of research evidence. As noted by Caspi (1995), "the extant evidence—containing many contradictory conclusions—has been used to support widely differing policy recommendations" (pp. 57–58). A more balanced overview of the literature on SS versus CE education would likely be useful.

Thus, this article reviews the literature on the correlates of and possible influences of whether or not a school is CE or SS. Both theoretical arguments and empirical data marshaled by both sides in this debate are reviewed. In the first sections, a brief discussion of the historical context and current controversies leads into a presentation of the theoretical views of both CE and SS proponents. In the following sections, the empirical evidence is reviewed, organized according to the theoretical propositions which justify the claimed benefits of each form of education. Arguments and data that are primarily applicable to either high school or college are highlighted, though some evidence may apply across all strata of schooling. The article's final sections consider the methodological constraints and limitations of focus of much previous research and suggest future research directions.

The Historical Context

American elementary school education, when first opened to women in the half-century after the Revolutionary War, was typically coeducational in Western

and rural areas. Only in affluent Northeastern cities and in the South were separate-sex schools common. Secondary schools were more likely than elementary schools to be single-sex and served as agents of socialization into the more sex-segregated workplace (Hansot & Tyack, 1988). Nevertheless, despite continued, often acrimonious debate, by 1900 98% of public high schools in the United States were CE (Diehl, 1986). At the college level, the issue remained somewhat more controversial throughout much of the 20th century. Many schools' conversions to coeducation were driven by financial crises rather than by educational philosophy (Bednall, 1993; Kolesnik, 1969; Woody, 1974).

The 1960s and 1970s saw a further move away from SS education at the high school and college levels. Among private high schools, the percentage of SS schools in the National Association of Independent Schools dropped from 62% in 1964 to only 21% in 1991 (McGough, 1991). The percentage of colleges in the United States that are not CE has dropped from 42% in 1910 to 25% in 1960 to 7% in 1982 (Grant & Snyder, 1983), and the actual number of U.S. all-female colleges has dropped from over 250 in 1960 to fewer than 100 (Riordan, 1990). The primary reasons for change have been legal, social, and economic (Lee & Bryk, 1986; Tyack & Hansot, 1990). Title IX legislation has made public SS schooling virtually extinct (Bailey, 1993; Lee & Marks, 1992). Ironically, though, Title IX was designed to compensate for sex discrimination and inequitable resource allotment found *within* coeducational institutions; negative policies toward SS schooling because of Title IX were only an afterthought (Fishel & Pottker, 1977; Riordan, 1990). Title IX has probably contributed to the decline of SS private schools as well. The result is that SS schooling is regarded by some as anachronistic or reactionary (Lee & Marks, 1992).

Although CE schooling once engendered bitter controversy in the United States (Tyack & Hansot, 1990) and has continued to be hotly debated in other parts of the world (Cocklin & Battersby, 1987; Kauermann-Walter, Kreienbaum, & Metz-Gockel, 1990), for many years the issue was presumed resolved in England and the United States. Of the transition to almost exclusive coeducation in England, Sutherland (1985) states that "there must be few instances where such a radical change in education has occurred in such an absent-minded way" (p. 155; cf. Bednall, 1993; Rowe, 1988). Only in the past decade has a backlash occurred in the United States. It was typified by the successful strike waged by Mills College students to preserve their women-only status, and by the popular press's subsequent sympathetic treatment of this and other threatened closings of women's colleges (English, 1990; Tifft, 1990a). A well publicized Women's College Coalition study showed that even though all-female colleges have only 125,000 students nationwide (half that of 20 years ago) and make up only 4.5% of all female college students, they account for one fourth to one third of all female board members of Fortune 1000 companies and half the women in Congress (Tifft, 1990a; Watts, 1994). Evidently, the recent publicity has proved fruitful: The Women's College Coalition reported that enrollments for the 1992-93 academic year were up for 85% of SS women's colleges (Masters, 1992). Nevertheless, whether there will continue to be demand for SS colleges is the subject of continuing debate, as exemplified by Smith College's ongoing reevaluation of its own SS status (Clemente et al., 1994; de Villiers, 1994).

Conversely, there are only two remaining secular, private, all-male colleges in

the United States (McGowan, 1991). The SS status of public military academies such as VMI and the Citadel has come under fire (Allen, 1990), culminating in a June 1996 Supreme Court ruling (*United States v. Virginia*) that VMI (and thus the Citadel) had to admit women or forfeit future public funding (D. P. Baker & O'Hanlon, 1996; Biskupic, 1996; Fein, 1996). Both schools have complied.

Similarly, although Robeson Academy, a Detroit public school program placing minority boys in SS classrooms, achieved demonstrable benefits which have been replicated elsewhere (Zanders, 1993), this did not deter the courts from disallowing such programs on the grounds of sex discrimination (Hollinger, 1993). The U.S. Department of Education's Office of Civil Rights discontinued a similarly successful program in Dade County, Florida, for the same reasons (Tifft, 1990b; Wright, 1991). The concept of temporarily isolating a specific subset of disadvantaged students, when the benefits may far outweigh any negative effects, has some champions (Hamilton, 1986; Whitehead, 1994), but continues to encounter opposition. Nevertheless, the state of California has recently mandated the public funding of a new generation of public, SS schools, beginning with the Lincoln Unified School District in Stockton in 1997. The Young Women's Leadership School, an SS school for girls in Harlem that was opened by the New York public school system in 1997, is another attempt to reap the claimed benefits of SS schooling.

Arguments Favoring Single-Sex Education or Coeducation

In the light of these current controversies, it appears especially timely to review the theoretical imperatives and empirical support for coeducation versus separate schooling. In the following section, arguments advanced in favor of each form of education are presented.

Arguments Advanced for Coeducation

CE advocates do not typically claim that coeducation is pedagogically superior. Rather, they argue that because CE schools reflect real-world social interactions, they better prepare youth for cross-gender interactions and integration into society (Dale, 1971, 1974) and may reduce sex stereotypes (M. B. Harris, 1986). Others claim that even if CE is not inherently better, it is fairer, in that SS girls' schools have traditionally received poorer funding and fewer resources than parallel boys' schools (Hansot & Tyack, 1988). Another claim is that without male classmates, females have lower, more traditional aspirations and are more often shunted into stereotypical occupations. Conversely, separating girls from boys to provide them with more opportunities to move into stereotypically male-dominated roles is seen by some feminists as a capitulation to dominant male values such as competitiveness and individualism rather than as an attempt to improve male-female equity in either school or the subsequent workplace (Kenway & Willis, 1986). Another claim is that CE classrooms better socialize boys by curtailing wild and antisocial behavior (M. B. Jones & Thompson, 1981). In addition, feminists such as Kenway and Willis feel that "when girls are taught separately, then boys' education in this area is neglected and the problems of *their* sexist attitudes and behavior remain" (pp. 21-22). Finally, many school systems simply find SS schooling too expensive.

Arguments for Single-Sex Education

Given the ubiquitousness of CE schooling, most theoretical statements on this topic are from those seeking to change or provide alternatives to the status quo. It is primarily for that reason that this section on arguments favoring SS schooling is longer and more elaborate than the section on arguments favoring CE education. Pro-SS arguments can be divided into those that claim benefits for all students, those that claim benefits for females, and those that claim benefits for males.

Benefits for all students. SS high schools are claimed to have more serious and studious climates which are more immune to the dominant "rating and dating" culture (Finn, 1980; Koepke, 1991; Lee & Bryk, 1986). By contrast, CE high schools are portrayed as "jungles of dating and social maneuver" (Coleman, 1961; Goodlad, 1984) in which overly aroused adolescents are pressured into early experimentation, which results in warped cross-gender socialization and gender confusion (Gilder, 1973; Kolesnik, 1969). These arguments are generally not refuted by CE advocates, but rather are dismissed as necessary evils needed to achieve equity or acclimate youth to cross-gender coexistence. Some religious groups, including some Catholics (De Grandpre, 1970), Muslims (Shaikh & Kelly, 1989), and Orthodox Jews (Fisher, as cited in Riordan, 1990), strongly prefer SS schooling because they feel that the spiritual and moral enhancement of an SS environment would override other considerations.

Numerous studies have shown, both in school and in the workplace, that members of both sexes at all ages prefer within-sex associations, that the sexes differ in interaction style, and that male-female verbal interactions often work to the actual and affective detriment of the female members of a mixed dyad or group (Anyon, 1983; Cone & Perez, 1986; Larwood & Blackmore, 1978; Maccoby, 1990). However, one could argue that a preference for same-sex interactions does not imply a preference for exclusively same-sex interactions.

The assertion by CE advocates that CE schooling can better reduce sex stereotypes is challenged indirectly by research into classroom racial integration (Hawley, 1993; Riordan, 1990). In addition, Gilder (1973) cites anthropological evidence that virtually every primitive society teaches the sexes separately, such that CE is not necessarily more "natural" or "normal."

Benefits for females. Originally, feminists thought that CE schools would alleviate sexism (Lasser, 1987; Tyack & Hansot, 1990). However, others argue that SS schools could provide antidotes to gender inequity (Bailey, 1993; Epstein, 1988; Graham, 1974; Keohane, 1990). Still others perceive CE schools as inherently patriarchal and/or actively detrimental to women (Arnot, 1983; Chafetz, 1990; Kauermann-Walter et al., 1990; Rossi, 1987; Sarah, Scott, & Spender, 1980), because females in such schools are pressured to not outshine males, to obsess about clothes and hair, and to adopt a silly or silent demeanor. The issue of whether coeducation reduces gender stereotypes or fosters gender confusion is a central point of contention between CE and SS advocates (Fox-Genovese, 1991, 1994; S. Hyde, 1971; Kenway & Willis, 1986; Lee, Marks, & Byrd, 1994). To those who see all male-female differences as arbitrary, anything that would nullify such distinctions, such as coeducation, is desirable. For those who see inherent male-female differences in the pace and style of physical and cognitive maturation,

tion, learning, and social and moral development (Gilbert, 1993; Tidball, 1993), schooling is best tailored to each sex's unique needs.

Direct scholastic benefits for SS-educated females have also been claimed, including a greater likelihood of having same-sex peers pursuing serious academic and leadership roles and more opportunity to have accomplished female teachers and role models (Finn, 1980; Lee & Bryk, 1986; Tidball & Kistiakowsky, 1976). A related claim is that coeducated females at all educational levels are shortchanged by a lack of teacher attention and a curriculum structure geared to male needs. There is evidence that in CE schools, boys monopolize physical space, linguistic space, and the attention of teachers (Mahony, 1985). As for the traditional disparity in resources allocated to female SS schools compared to male SS schools, Riordan (1990) notes that 30 years of research demonstrate that "the physical resources of a school have little influence on the quality or quantity of the education that ensue from the facility" (p. xi; cf. Coleman et al., 1966; Fuller, 1986; Mosteller & Moynihan, 1972).

Benefits to males. In contrast to the primary concern about females during high school, much of the critique of coeducation for males focuses on elementary schooling. SS advocates argue that coeducation does not allow for the different forms and time frames of male maturation, nor for the optimal discipline and structure needed by young males, given their greater tendencies to restlessness and aggression (Gilder, 1973; Hawley, 1993; Riesman, 1991; cf. F. W. Schneider & Coutts, 1982). Sexton (1969) presents a strongly argued version of the historical view that female-dominated schools feminize compliant boys, foisting unnatural submissiveness upon them while marginalizing their more boisterous fellow males. Hawley also posits that most adolescent males cannot avoid being distracted by female classmates without a toll of wasted energy and frustration. A more urgent concern is for males from disadvantaged backgrounds (Hamilton, 1986; Tifft, 1990b; Whitehead, 1994) and those desperately needing male role models (Hanson, 1959; Levine, 1964; Sexton, 1969), who do not thrive in the CE environment dominated by female teachers. Finally, some educators argue that SS schools facilitate male bonding and optimize character development in both high school and college males (McGough, 1991; Watts, 1994).

Research Evidence for and Against Coeducation

As the research literature on CE versus SS education is voluminous and also varies greatly in quality, this review is limited to the most comprehensive and representative studies (in terms of sample size and appropriate statistical controls), as well as some studies with unique criterion variables. The review is limited to studies dealing with postelementary education—primarily junior and senior high school, though some attention is given to studies at the college level. Most studies have focused on these postelementary age groups, and although some of the issues of adolescence may no longer be as relevant in the college classroom or the larger college environment, the reasons for preferring SS or CE education in college have some degree of overlap with the reasons for preferring one or the other of these forms of education in high school. For reasons noted later, the research on some topics, especially career achievements of women, has been focused on postsecondary graduates of CE and SS colleges, rather than high schools. By contrast, there may be very different reasons for considering CE or SS

in elementary school, such that it was deemed inadvisable to mix research findings from elementary and high school samples.

Four issues need to be highlighted before this literature is reviewed. The first is the range of criteria, which parallels the range of argued benefits and costs of both school types. CE and SS schools have been compared and evaluated in terms of academic performance, attitudes toward academics, discipline while in school, enjoyment of school, aspirations of students and attraction to nonstereotypical coursework (especially for girls), student self-esteem, and postschool success. Academic performance would logically seem to be the highest-priority and thus most important criterion of school effectiveness; however, the relative importance of these criteria is itself controversial, as it relates to one's view of the role of school in socializing youth. It would therefore be important to assess the claims of findings relative to their criteria, and then to determine whether tradeoffs are required in order for schools to achieve more important goals.

The second is the issue of statistical confounds when comparing CE and SS schools. Because of the virtual nonexistence of public SS high schools and the paucity of public SS colleges, at least in the United States, SS schools used for comparison are most often private schools. These schools often draw their students from families of higher socioeconomic status or are parochial schools, which may be more religiously homogeneous than public schools. Thus it is necessary to separate effects attributable to school type from those attributable to differences in the student bodies, regardless of type of schooling. In addition, when studies take place in countries whose schooling traditions are quite different from those of the United States, and especially if they differ from the norms of Western countries, other concerns about generalizability are salient. These issues are addressed when presenting relevant studies.

The third issue is the predominant practice in this literature of comparing effects on the level of whole schools, even when some (though not all) of the presumed benefits of separating the sexes could conceivably be attained by means of separate classrooms within CE schools, thus detracting from the evidence in favor of SS schooling. The separate classroom option is discussed in greater depth later.

The fourth issue is the lack of attention to the possibility of individual differences at both the school level and the student level. Studies comparing CE and SS schooling on any number of dimensions generally take it as a given that each school of either type embodies the qualities or deficiencies typical of that form, without considering the possibility that within-type differences due to variables such as locale, school tradition, school administration values and ideologies, and student body characteristics may be greater than between-type differences (Bone, 1983; Kenway & Willis, 1986). In addition, with few exceptions (described later), the possibility that either type of schooling might be more beneficial or harmful to some students than to others is not considered. This seeming inattention to within-type variance is problematic and casts a degree of skepticism over the practical implications of the research.

In the following review, SS schooling has received considerable, though hardly unequivocal, research support across numerous studies. Although other criteria are of interest, most of this support is related to two areas: (a) the academic and psychoemotional benefits of SS schools and (b) the gender-equity potential of SS

schools, especially in terms of the resources, mentoring, and atmosphere available for females at SS schools. This research support is discussed along with contrary evidence and opposing views which dispute pro-SS interpretations of the research.

Theoretical Assertion 1: Single-Sex Schooling Has Positive Benefits for the Academic Achievement of Both Sexes

In a comprehensive study with a random sample of 1,807 students in 75 Catholic high schools, drawn from the national High School and Beyond (HSB) sample, Lee and Bryk (1986) found positive effects associated with SS schools for both sexes. Students at SS schools demonstrated higher academic achievement and educational aspirations, with effects generally higher for females. Girls at SS schools did more homework and enrolled in more math courses, and SS boys enrolled in more math and science courses, than did their counterparts in CE schools. Both male and female SS students rated their schools and the quality of teaching at their schools more positively. Lee and Bryk point out that these effects cannot simply be explained by pointing to better teacher-student ratios at SS schools, because the all-male schools in the sample had larger classes than the CE schools, whereas all-female classes were even smaller than the CE ones. All-male schools had higher per-pupil expenditures, greater teacher stability, and a higher percentage of teachers with advanced degrees than did CE schools. All-female schools were lower than CE schools on each of these variables; nevertheless, students at both all-male and all-female schools outperformed their CE counterparts. Lee and Marks's (1990) extension of this research found additional positive attitudinal and behavioral outcomes derived from SS schooling. Riordan (1990), using somewhat different sampling procedures in his analysis of the HSB data, arrived at similar conclusions. In Catholic schools that were predominantly White, SS girls did better academically, whereas in Catholic schools that had large minority populations, both sexes did better with SS schooling. Later reanalysis showed the greatest gains in SS schooling accrued to Hispanic and African American males and females (Riordan, 1993). Earlier, using 1972 National Longitudinal Study (NLS) data, Riordan (1985) found higher high school and post-high school academic achievement among SS high school students, especially females.

However, Marsh (1989) and Kenway and Willis (1986) have argued that because some SS schools are more selective and draw brighter students from higher socioeconomic backgrounds, simple CE-SS comparisons are invalid. Marsh (1991) further argues that CE-SS differences have been confounded with Catholic school-public school differences and that the latter is the prime differentiator. Marsh's reanalysis of the HSB data and his own study of 2,332 Catholic high school students, in which these factors were controlled for, showed far fewer CE-SS academic differences.

Lee and Bryk (1989), in turn, have attempted to refute Marsh's criticism. Among other things, they argue that their study's comparison of SS and CE Catholic parochial schools cannot be assumed to have the same confounds as a study comparing public and private schools. They also argue that the variance in some of the variables Marsh controls for is in essence SS-relevant variance. Riordan (1985) has also taken issue with Marsh's premise. In his study showing

academic benefits to SS schooling, Riordan (1990) explicitly controlled for the same types of factors mentioned by Marsh. Moreover, as Riordan's findings are most pronounced in Catholic schools with largely African American populations, the claim that socioreligious homogeneity accounts for SS-CE differences is somewhat implausible. In another study of 3,638 Australian ninth graders, in which students were matched on socioeconomic status, thereby controlling for preexisting differences, both males and females performed better academically at SS schools (Young & Fraser, 1990).

Additional support for Lee and Bryk (1989) and Riordan (1985, 1990), albeit at the college level, can be found in a study by Smith (1990). Smith compared the academic performance of women at women's and coed colleges, after controlling for numerous background characteristics, such as parental education and income, ethnic background, high school GPA, and academic aptitude (i.e., SAT scores). Students at the women's colleges graduated at a higher rate (65% versus 50%). However, Marsh and others remain convinced that evidence of the academic superiority of SS schooling has been exaggerated, such that this debate cannot be said to have been resolved; in fact, the terms for resolution have yet to be resolved.

One study found slight academic benefits in CE schooling. Lordan (1987) studied 12 Catholic senior high schools with substantial minority enrollments and found that CE females had slightly higher scores on college entrance achievement tests than SS females, though males did not. Lordan, noting that his pro-CE findings contradicted the preponderance of other studies, concluded by questioning the generalizability of his own data.

Theoretical Assertion 2:

Single-Sex Schooling Is Positive for Females in Sex-Typed Subject Areas

There is evidence that females' achievement in stereotypically male subjects, such as science, is enhanced at SS schools (Harding, 1981). A number of studies addressing this issue have been conducted outside the United States. In a study of Australian high schools, SS females participated in and achieved more in science classes, even though comparable CE schools offered better facilities (Branson & Miller, 1979). Finn (1980), in a study of 2,777 English high school students, found CE females losing ground to males in science and vocabulary, whereas SS females actually exceeded SS male performance in reading and several science subjects. Gwizdala and Steinback (1990) found that SS females' attitudes toward math were more positive than those of their CE counterparts, and that the SS students felt that including males in their classes would be detrimental to their math studies. However, each of these studies, when taken alone, suffers either from failing to control for preexisting differences or from reporting potentially dated male-female differences in attitudes toward math and science. However, Lee and Lockheed (1990) did control for student background, teacher qualifications, and school characteristics and still found that Nigerian women in SS high schools did better in math and had less stereotypic views about math. A study by Jimenez and Lockheed (1989) with 3,265 eighth graders in Thailand found similar positive effects in math performance for SS females, though not for SS males. Their study controlled for individual background variables, socioeconomic variables affecting school choice, and teacher, peer group, classroom, and school characteristics. Finally, an Australian study by Carpenter and Hayden (1987), in

which the authors controlled for socioeconomic status, teacher and parental encouragement, peer influence, and extent of science curriculum, found significant performance effects for SS females in one of two samples. Thus, when these studies are taken as a whole, there appears to be some support for the view that females may benefit from SS schooling, especially in math and science. It is noteworthy, however, that few studies of this type have been undertaken in the United States. (On the other hand, these variables—female performance in science and math—have been subsumed in the aforementioned work of Riordan and of Lee and colleagues, with similar results.) There is also some related evidence (discussed later) that SS classrooms within CE schools can improve female math performance (Fox, Brody, & Tobin, 1985; Subotnik & Strauss, 1995).

Greater involvement in stereotypically female behaviors by SS males has also been posited. Riesman (1991) cites anecdotal evidence that SS males at the elementary and high school levels are more likely to engage in certain activities such as choral singing, poetry, drama, and language fluency. However, there appears to be little, if any, formal research devoted to this subject.

*Theoretical Assertion 3:
Single-Sex Schooling Is Beneficial for Female Career Aspirations*

Research that attempts to determine if SS schooling leads women to higher career aspirations and accomplishments generally uses the SS or CE status of postsecondary, rather than secondary, education. Perhaps this is due to college's greater proximity to the time of entering the workplace, and because it is the place in which college-bound youth actually choose and embark on their professional studies.

In a major study of over 200,000 students at 300 colleges, Astin (1977) found that women at SS colleges (a) had greater roles in student leadership, (b) were more likely to complete bachelor's degrees, and (c) were more likely to aspire to higher degrees. However, there were no controls for preexisting differences, and the results regarding aspiration to higher degrees may be especially dated.

A series of studies by Tidball and colleagues support the view that graduates of women's colleges are relatively more accomplished and that their educational achievements are in a wider range of disciplines (Tidball, 1973, 1980, 1986; Tidball & Kistiakowsky, 1976). A recent replication and extension by Rice and Hemmings (1988) showed that over four decades (1940–1979), graduates of women's colleges were 1.5 times more likely than CE graduates to become career achievers, as defined by recognition in the book *Who's Who of American Women*. However, Oates and Williamson (1978) have disputed the Tidball studies, based on their analysis of women listed in the *Who's Who* for 1973–1974. They claim that an inordinate number of high-achieving graduates of female SS colleges have come from highly selective Seven Sisters colleges, and that entrance into equivalent Ivy League colleges was not open to those women at the time of their college careers. Thus, they postulate that women currently graduating from schools such as Harvard and Yale would likely be as accomplished as graduates of SS colleges.

The issue of whether access to previously all-male colleges will reduce the quality of graduates of female SS colleges is exemplified in the debate over Smith College's status. CE advocates on the faculty have argued that Smith has shown a 25-year drop in average SAT scores, in contrast to formerly SS "Seven Sister"

colleges, which have not shown similar drops. They have attributed this decline to an inability to attract gifted students, as attested to by survey evidence that only 4–6% of women are willing to even consider attending an SS college. They have further claimed that most students come to Smith only as a second or third choice (Clemente et al., 1994). However, another faculty member has disputed their interpretation of the data, noting that the drop in SAT scores occurred over 20 years ago, when prestigious all-male schools such as Harvard and Yale first began to admit (and compete with Smith for) females. The SAT scores of incoming Smith students have been stable for the past 20 of those 25 years. In addition, surveys conducted by the Smith board of admissions indicate that 85–90% of incoming students claimed that Smith was their first choice (de Villiers, 1994). Both sides agree, however, that the actual number of applicants each year continues to grow.

In addition to the work of Tidball and her colleagues, other studies support the view that an SS college education could be beneficial for some females. Moreover, rather than focusing solely on the few individuals who achieve high-status recognition, these studies treat the relative career accomplishments of typical women as the criterion of interest. Riordan's (1990) NLS research using appropriate controls found that graduates of SS colleges held higher-prestige jobs than their equivalent CE peers. Giele (1987) studied the career choices of 1,269 SS and 977 CE college graduates from the years 1934–1979 who were drawn from the 1982 Life Patterns Study. After controlling for parental education and occupation, Giele found SS graduates more likely than CE graduates to take the most traditional (homemaking) and least traditional (government, business, and economics) career paths. Giele's findings show that at least some SS colleges may play a role as bearers of traditional values, while others may act more as enablers of nontraditional vocational options. Each role may appeal to different supporters of women's colleges or to the supporters of different colleges. This finding underscores the possibility that within-group differences among SS schools may be significant and not amenable to generalizations about the genre.

Unlike the other college-oriented studies discussed above, one study found that women who attended SS high schools were more likely to show an interest in so-called "nontraditional" occupations (occupations in which males typically predominate) (Rubinfeld & Gilroy, 1991). However, the study did not measure actual occupational choice, much less finishing college training and actually participating in a nontraditional occupation. In addition, the interaction of type of college subsequently attended (CE or SS) with type of high school attended, and their joint effect on eventual career plans, could not be ascertained.

A related consideration for females, relevant to both secondary and postsecondary education, is access to same-sex mentors. Noe (1988) asserts that same-sex mentoring has many benefits, and lists a number of barriers to cross-sex mentoring in work organizations, some of which are even more applicable to an academic environment. These include stereotypic attributions and societal norms which make cross-sex mentoring subject to negative and/or jealous perceptions by others (Fitt & Newton, 1981; Clawson & Kram, 1984). In addition, Geis, Boston, and Hoffman (1985) found that female role models were especially beneficial to female employees. Not surprisingly, SS women's colleges have more same-sex teachers, who serve as potential role models and mentors (Miller-Bernal, 1993),

and are more likely to have female science teachers, who also serve as potential role models (Blin-Stoyle, 1983). Similarly, SS high schools in the United States and England tend to have a majority of male teachers at boys' schools and an overwhelming majority of female teachers at girls' schools (Finn, 1980). By contrast, males dominate faculty positions at CE colleges. Conversely, CE elementary school boys are less likely to have same-sex mentors, a problem most acute for those from underprivileged and single-parent homes (Hamilton, 1986; Hanson, 1959; Levine, 1964; Sexton, 1969; Whitehead, 1994).

Theoretical Assertion 4: Single-Sex Schooling Is Beneficial for Positive Sex-Role Attitudes and Self-Esteem

Academic opportunities and aspirations. Trickett, Trickett, Castro, and Schaffner (1982) found that all-female high schools had a more academic orientation, as measured by greater interest in academics, greater task emphasis, and more homework. Trickett et al. reported that the CE and SS students in their study had equivalent socioeconomic backgrounds and SAT scores upon entrance, which led them to conclude that their results could plausibly be explained by differences in school type.

Similar findings have been reported in non-American studies. In Foon's (1988) study of 1,675 Australian tenth graders, SS schools were also more tolerant of students taking courses traditionally associated with the opposite sex, and the students were more likely to take nontraditional courses. Stables's (1990) study of English seventh and eighth graders found that CE schools had more sex-stereotypic polarization of attitudes regarding course subjects than SS schools, and that boys were affected by these attitudes even more than were girls. The CE and SS students in Stables's study had comparable academic ability, as measured by scores on standardized tests taken before attending the schools. The issue of male-female differences in math and science performance, and the possible ameliorative role of SS schools or classrooms, is discussed further in the context of the fifth theoretical assertion.

Socioemotional variables. Lee and Bryk (1986) found that SS females had less stereotypical adult sex role attitudes, were more likely to express internal locus-of-control attitudes, and had higher self-concepts. Cairns's (1990) study of 2,295 students in 76 Northern Ireland schools found similar results, albeit in a different culture and with a mixture of secondary and grammar school students. Cairns's study, which controlled for social status, found SS schools associated with greater perceived cognitive competence, higher self-esteem, and internal locus of control. The ethnographic research of Eder (1985) indicates that the presence of boys in a middle school disrupts the bases of popularity among females, so that an overemphasis on looks is primarily harmful to same-sex friendships among females. Riordan (1990), in a carefully controlled study, also found female graduates of SS schools to have somewhat happier marriages, a finding that contradicts one claimed rationale for mixing the sexes during school.

Based on previous research, there is reason to hypothesize that women at SS colleges are likely to experience higher self-esteem and self-confidence, show more vocational maturity, have higher vocational aspirations, and be exposed to more leadership opportunities both during and after their college careers (Monaco & Gaier, 1992). In Astin's (1977) aforementioned study, SS college females had

(a) greater student academic involvement, (b) more student-faculty interaction, (c) higher intellectual self-esteem among students, and (d) greater satisfaction with all aspects of college life. Astin's study did not control for preexisting differences. However, in Smith's (1990) aforementioned study, which did control for preexisting differences, students at women's colleges reported more satisfaction with academics, more contact with faculty, and more perceived self-growth than those at CE colleges.

Theoretical Assertion 5: Coed Classrooms Foster Gender Inequities

Another issue of concern is the claim that females in CE classrooms are given less attention (Fishel & Pottker, 1977; Sarah et al., 1980; Tyack & Hansot, 1990). This view is supported by a recent report by the American Association of University Women (AAUW; 1992), which summarized 1,331 studies of girls in schools. The report presents a pattern of unequal support and attention when both sexes are in the same classroom, a pattern found at all levels of schooling from preschool to college (Barba & Cardinale, 1991; Brophy & Good, 1974; M. Jones, 1989; Lockheed, 1984; Sadker & Sadker, 1986). The evidence of differential treatment takes many forms: Males are allowed to call out more; they are called upon more often; they are permitted to talk longer and are more encouraged to challenge and question in the classroom; their responses are actively solicited more frequently; and they receive more precise and informative feedback and useful evaluation (D. Baker, 1986; Becker, 1981; Sadker & Sadker, 1985; Sadker, Sadker, & Thomas, 1981). At the college level, Sadker and Sadker (1986; Sadker, Sadker, & Klein, 1991) similarly found that at coed colleges, professors ask males more questions, challenge them more academically, and are more likely to remember their names. Their findings replicated a Harvard College study in which male students dominated class discussions in mixed classes, especially with male instructors (Krupnick, 1985). Whether differential treatment is the result of greater value associated with teaching males or whether it indicates teacher attempts to control potential classroom disrupters by providing them with more resources is unclear. However, some evidence indicates that it is capable boys, rather than potential troublemakers, who are being favored (Eccles, 1989). Williams (1990) also points out that much of the research showing differential classroom participation incorrectly jumps to the conclusion that it is the instructors, rather than the students (i.e., more aggressive males), who effect these imbalances.

These imbalances are often most evident in stereotypically male disciplines, such as math, science, and mechanics (Kahle & Lakes, 1983; Kahle, Parker, Rennie, & Riley, 1993; Lee et al., 1994; Tobin & Garnett, 1987; Whyte, 1986). A meta-analysis of studies regarding gender differences in attitudes toward math concluded that high-school-age females do not hold intrinsically negative views toward math. Rather, male students and instructors convey to their female classmates and students their stereotypic views that math is unfeminine. In turn, females interpret these views as pressure to choose between social popularity and math prowess (J. S. Hyde, Fennema, Ryan, Frost, & Hopp, 1990; cf. Kelly, 1988). It is thus unsurprising that male-female performance disparities first surface during high school (J. S. Hyde, Fennema, & Lamon, 1990; Meece & Eccles, 1993) and that females participate less than males in CE science and calculus classrooms (Jones & Wheatley, 1990; Meece & Eccles, 1993).

SS schooling has been proposed as one solution to the problem of classroom inequity (Bailey, 1993), on the idea that it removes females from a classroom setting in which they compete unsuccessfully for attention (AAUW, 1992). Eccles (1987) has demonstrated that females perform better in math in "female-friendly" classrooms, characterized by cooperative versus competitive climates and strong teacher emphasis on the intrinsic and instrumental (i.e., occupational) benefits of studying math. It is likely that "female-friendly" classrooms are achieved most easily by limiting the classroom to females. However, there is evidence that even some SS schools for females are not immune to catering to stereotypic female limitations in some subjects (Lee et al., 1994), and a possible alternative to SS schooling could be enhanced equity training for teachers (Mason & Kahle, 1989; Scantlebury & Kahle, 1993).

Inequities in classroom treatment can lead to other difficulties for females, such as lowered self-esteem, learned helplessness, and lowered expectations about the capacity to succeed academically, especially in gender-stereotyped disciplines (Dweck & Repucci, 1973; Gardner, Mason, & Matyas, 1989). Research described above indicates that these presumed outcomes of classroom inequities are generally less problematic for females in SS schools.

In addition to differential treatment by instructors, Maccoby (1990) has shown that women are more submissive and persuadable when interacting with men than when interacting with other women. Thus, mixed-gender classrooms may be inherently disadvantageous to females. In addition, achievement by female students is inversely related to the number of males on campus and is positively related to the percentage of females on the faculty, though only at all-female schools does that percentage approach 50% (Sadker et al., 1991). This effect is probably related to the availability of same-sex mentors, discussed previously.

The SS classroom option. A current debate among leading researchers in the field is whether the benefits claimed by SS advocates could be realized as well in SS classrooms as in SS schools (Moore, 1993). Although relevant to all of the theoretical assertions presented in this article, this issue is discussed here because most SS classroom research has focused on classroom inequity and female participation in math. Though the research has been limited, there is some evidence that SS classes could be advantageous in a number of ways. Fox, Brody, and Tobin (1985) cite previous findings showing that all-girl mathematics classes in early adolescence were beneficial to female performance. Their own study showed that in advanced high school math classes, classes with a majority of females had lower attrition rates. Earlier, Fox (1976) compared the performance of an SS class of gifted seventh-grade girls to that of a carefully matched group of girls in CE classes; Fox found positive effects for the all-female classes. Other studies with experimental SS female courses (Kravitz, 1984; Rowe, 1988) have arrived at the same conclusion. However, all of these studies have involved volunteers, so that the possibility of self-selection bias taints their generalizability (Subotnik & Strauss, 1995). A study in which students were randomly assigned to both SS and CE classes had more equivocal results (Subotnik & Strauss, 1995).

A number of recent field studies have also suggested benefits of SS classrooms. M. D. Evans (1993) found that separating seventh graders into separate male and female classes improved male behavior and female motivation and academic performance. In another field study, albeit at the kindergarten level, Wright

(1991) demonstrated impressive gains in both academics and attendance for Black males from homes without male role models. Anecdotal evidence also indicates that splitting classes can benefit both males and females (Richardson, 1995).

Based on the current review, one may postulate that SS classrooms may achieve some, but certainly not all, of the claimed benefits of SS schooling. Some of the concerns not directly addressed by SS classrooms include the "rating and dating" environment in the CE school, the distractions of sexual tension for adolescent males, concerns over sexual harassment, and limitations on leadership roles for females. In addition, it is possible that SS classrooms within a public CE school are equally or more legally problematic than SS schools with parallel, equivalent programs for both genders (Fischer, 1991; Moore, 1993).

Theoretical Assertion 6: Coed Schooling Is Beneficial for Male Discipline

Extensive research in the late 1960s and 1970s found that CE schools had friendlier and more relaxed atmospheres, with more opportunities for pleasure-centered social contact (Dale, 1971, 1974; S. Hyde, 1971). At the college level, Astin (1977) and Smith (1990) also found that CE colleges were rated as having more enjoyable campus social lives by SS males and females, respectively. Dale (1974) also reported that boys in CE schools did better in mathematics and were less neurotic. Dale concluded that coeducation probably helped boys and did not harm girls. However, Lee and Bryk (1986) and Sutherland (1985) argue that the research of Dale and S. Hyde must be read in the context of their unabashed CE advocacy, as well as the then-prevailing attitude that school discipline was oppressive and not conducive to learning.

However, a number of relatively more recent studies also seem to provide some support for CE advantages in the realms of discipline and social issues. F. W. Schneider and Coutts (1982) studied the climates of SS and CE schools with a sample of 2,029 10th- and 12th-grade students. While not controlling statistically for socioeconomic differences, the authors note that both the CE and the SS students came from Catholic schools with predominantly similar backgrounds. They also found the students to have similar profiles on established personality inventories. Their results showed that students perceived CE schools as being more gregarious and friendly. CE schools were seen as emphasizing affiliation and pleasurable, nonacademic activities and deemphasizing control and discipline. However, they urged further research to determine if the more pleasant CE school atmosphere comes "at the expense of academic achievement and the development of other socially desirable qualities" (p. 906).

M. B. Jones and Thompson (1981) studied an all-male private school in central Pennsylvania that had recently been sex-integrated. Although no improvement in male effort or academic achievement was found, male discipline, as measured by number of detentions for misbehavior (profanity, crudeness, throwing things, etc.) and by course grades in conduct, was improved. However, the authors acknowledge that CE public school behavior is generally not superior to that in SS private schools, and speculate that perhaps only in a high-discipline private school would CE positively affect male discipline. As such, the findings have dubious generalizability.

Marsh, Owens, Myers, and Smith (1989) studied the transition of two SS

schools, one male and one female, into CE schools over a five-year period. The changeover was favored overwhelmingly by teachers, who claimed that students held the same views. There was also no decline in academic performance. It is possible that, as in the study by M. B. Jones and Thompson (1981), teacher preference for CE may be a function of greater ease in disciplining males alongside females, a gain which Sexton (1969) sees as potentially detrimental to males. Another issue is that teachers and students who preferred separate schooling may have feared that their views would be interpreted as sexism, fear of the opposite sex, or resistance to change (cf. Riesman, 1991). Thus, stated preferences for CE schooling, after a change had already been made, could have reflected socially desirable responding or demand characteristics.

In contrast to the aforementioned study by M. B. Jones and Thompson (1981), Payne and Newton (1990) found mixed opinion as to whether introducing CE in a Barbados high school improved discipline. Males in that school also complained about perceived inequity in discipline and punishments; although a spoken goal was to teach boys that girls were equal, discipline practices showed a protectiveness of girls that boys found unfair. The result was that whereas boys supposedly gained an understanding of girls, boys' respect for girls was lost, with one further result being increased sexual experimentation. Contrary to Marsh et al. (1989), a number of teachers in Payne and Newton's (1990) study were unhappy with the changeover to coeducation. It should be noted, however, that both of these studies took place in different countries, each with somewhat different social and educational norms and traditions, religious mores, and gender roles. Finally, the studies in the previous section regarding SS classrooms (M. D. Evans, 1993; Wright, 1991) found that such classrooms improved male discipline.

Cross-sex harassment. A related issue which has recently received greater attention is cross-sex harassment by peers in classroom and school settings (AAUW, 1992; Strauss, 1988). Research indicates that females are more frequently the recipient of this type of harassment (Bailey, 1993; Stein, 1986). Obviously, SS schooling reduces opportunities for such harassment; moreover, as discussed above, exposing adolescent males to female peers on a regular basis increases sexual tensions that many youth lack the maturity to control (Hawley, 1993). In addition, even within CE institutions, departments with more women in positions of authority and prestige have less sexual harassment (Bond, Mulvey, & Mandell, 1993; Gutek, 1985). As discussed above, SS institutions have higher rates of female instructors and administrators, which would be expected to reduce the probability of harassment by male school employees.

Female delinquency. Most previous research has focused on the possible benefits of CE schooling for male discipline, with little attention to female discipline and delinquency. However, recent research by Caspi and colleagues (Caspi, 1995; Caspi, Lynam, Moffitt, & Silva, 1993) demonstrates the importance of this criterion as well. Caspi (1995) studied almost 1,000 New Zealand females of ages 5 through 15. The females were about evenly split between CE and SS schools. Although school choice was voluntary, the two groups were similar in background characteristics, and scholastic aptitude differences were statistically controlled.

Caspi (1995) found that in general, although the females in CE schools had more delinquent peers, they did not commit significantly more self-reported

delinquencies at either age 13 or age 15. However, in a rare instance of attention to individual difference variables, Caspi showed how physical maturation, as measured by time of menarche, moderated the relationship between school type and delinquency. A discrepancy between CE and SS schooling in delinquency both at age 13 and at age 15 (more delinquency at CE schools) was pronounced among early maturers, but nonexistent among late maturers. Time of menarche affected academic achievement as well: Even after socioeconomic effects and intelligence were controlled for, the SS females outperformed the CE students; however, while this was true for both early and late maturers, there was no difference among on-time maturers. Caspi concluded by warning about the importance of considering factors other than school-type main effects, an issue revisited later in the Discussion section.

*Theoretical Assertion 7:
Coed Physical Fitness Programs Adversely Affect Both Sexes*

Another situation that may arise in the context of CE schooling bears mention. In order to comply with Title IX and equalize resources devoted to male and female physical fitness, coed gym classes and sports programs are the required norm in public schools. Although these programs have been hailed by their advocates as producing youth less bound by gender stereotypes and increasing female opportunity (Oglesby, as cited in Monagan, 1983), there is ample evidence that they may introduce new sets of problems. Anticipated breakdowns in gender stereotypes have not been realized (Boutilier & San Giovanni, 1983; Geadelmann, 1980), and in some cases CE programs have exacerbated differences, created hostility, and actually strengthened student and teacher stereotypes (J. Evans, 1989; Griffin, 1985). Some schools have responded with various forms of de facto sex segregation during gym classes (Vertinsky, 1992), while others have dropped various sports, such as basketball and wrestling, in order to avoid problems associated with having CE teams (Lay, 1990). Moreover, research has shown that children learn athletic and sports skills faster in same-sex groupings (Grunwald, as cited in Monagan, 1983) and that boys and girls have different styles of play (Lever, 1976, 1978) and very different idealized self-images which intersect with their athletic participation (Adler, Kless, & Adler, 1992; Galdston, as cited in Monagan, 1993). A panel of leading pediatricians and sports authorities assembled in 1979 by the Ambulatory Pediatric Association (as cited in Monagan, 1983) concluded that advocates of integrated sports for postpubescent children may be doing girls' athletics more harm than good. Though some argue that the only solution is to radically refocus physical education and exercise, they agree that merely throwing males and females together under current mindsets will not effect change and may be disruptive to both genders (Vertinsky, 1992).

Ironically, one dubious outcome of overzealous application of Title IX has been the wresting of leadership and administrative control of women's collegiate sports from women: In 1972 women coached over 90% of women's teams and headed over 90% of women's programs, whereas in 1992 those numbers had been reduced to 47% and 16%, respectively (Acosta & Carpenter, 1992; Sperber, 1990). In addition to reducing the number of career opportunities for prospective female coaches, this trend, by making the male coach-female team combination

more common, has increased the risk of sexual harassment of female student athletes by male coaches, a well documented phenomenon (Lenskyj, 1986, 1990).

Discussion

This review of research evidence supporting SS or CE education reveals mixed degrees of support for various assertions. The first assertion, that SS schooling has positive benefits for the academic achievement of both sexes, is supported by the predominance of research, though (a) effects appear more pronounced and less ambiguous for females than for males (Moore, Piper, & Schaefer, 1993) and (b) some researchers continue to question any benefits from SS schooling. The second assertion, that SS schooling is positive for females in sex-typed subject areas, has some research support, though much of the research is limited by methodological flaws or possible lack of generalizability to American schools. Virtually no research has focused on the conditions for increasing male participation in female-stereotypic disciplines. The third assertion, that single-sex schooling is beneficial for female career aspirations, has been focused almost exclusively on postsecondary education and thus sheds little light on whether SS high schools affect female aspirations. Even the postsecondary evidence, although extensive, may be historically dated. The opening of Ivy League colleges to females and the demise of the SS status of some prestigious women's colleges may ultimately reverse previously documented findings. That attendance at SS schools will provide more opportunities for students to have same-sex mentors and role models is obvious. However, research evidence showing the benefits of same-sex role models and mentors, although ample when including workplace research, is more sparse when limited to studies of SS schooling.

The fourth assertion, that SS schooling is beneficial for positive sex-role attitudes and self-esteem, encompasses a number of different criteria and appears to have generated considerable research. However, this assertion and the studies supporting it have received less methodological scrutiny than the earlier assertions. The fifth assertion, that coed classrooms foster gender inequities, seems to be well documented. Although it is reasonable to posit that SS classrooms would alleviate the resultant problems, direct evidence is incomplete, and some (Lee et al., 1994) see pernicious sexism across all school types. The sixth assertion, that CE schooling improves male discipline, has received only weak and equivocal support. Moreover, there is some countervailing evidence, as well as some evidence that SS will reduce delinquency among some girls, and there is the real possibility that SS schooling could reduce sexual harassment. Finally, the seventh assertion, that coed physical fitness programs adversely affect both sexes, has received some indirect support, but clearly requires more research.

Based on the present review of the major assertions, the predominance of opinion and research seems to suggest possible benefits for SS schools, though effects appear more pronounced for females than for males (Moore, Piper, & Schaefer, 1993), partly because the overwhelming preponderance of research has focused on females and female concerns. The reasons for favoring SS schools at the high school level may not all be as relevant or as urgent at the college level, and the mix of considerations is certainly different at the elementary school level (Riordan, 1990). Virtually no one suggests that SS schooling should be preferred

over CE schooling at the graduate school level (Riesman, 1991). A number of areas for further research emerge from this review. At least some of these research objectives may be best accomplished by educational psychologists in collaboration with other social scientists and psychologists, as described later.

Directions for Future Research

Clarification of results. More research is needed to clarify if the advantages of SS schools are independent of their size, student-teacher ratios, or religious philosophies (Lee, 1993). Much more research is needed into the differing dynamics of all-male, all-female, and CE classrooms, as well as the interaction between leader behavior, male and female group dynamics, and course and textbook content (Williams, 1990). Also needed are longitudinal studies focused on long-term socioemotional effects of school type, though the potential indexes of successful or maladaptive psychosexual development (i.e., rates of unwed motherhood, sexually transmitted diseases, rape, spousal abuse, divorce, etc.) may be controversial. Also, measures of posteducational job success and workplace adaptation need to go beyond flashy, high-end measures such as Fortune 1000 leadership positions and measure criteria of performance and interpersonal competence that are applicable to a larger range of workers and careers.

Methodological options. Although sophisticated techniques such as meta-analysis (Hunter, Schmidt, & Jackson, 1982; Light & Pillemer, 1984) are ultimately preferable, two difficulties in the literature currently prevent their use to resolve ongoing controversies. First, there continues to be serious debate about how to analyze the data from the national High School and Beyond (HSB) sample, perhaps the finest sample available on the subject of SS versus CE education. Rival approaches to analysis of the HSB data—specifically, approaches that differ over how and what variance should be partialled out of analyses—have led researchers to starkly different conclusions (Lee & Bryk 1986, 1989; Marsh, 1989; Riordan, 1985, 1990). Their divergent approaches would apply to other studies as well. Thus, adding contested results to other results, regardless of the methodology, will not lead to resolution or consensus.

Second, what would typically be viewed as an embarrassment of riches for a research topic—a wide range of roughly comparable studies conducted in a large number of different countries and societies—is viewed as problematic when applied to SS-CE research. The countries are seen as being very different in terms of educational traditions, socialization patterns, acceptance of change, family and employment structures, and even cultural and religious influences. However, with rare exceptions (cf. Cocklin & Battersby, 1987; Lee & Lockheed, 1990), little has been done to at least determine to what extent, or regarding which variables, different countries can be considered comparable; nothing has been done to quantify these differences. This issue could be clarified by collaborative research with other social scientists who could assess the relevant distinguishing features of the various countries and their educational systems and, through some form of multidimensional scaling, determine the comparability of various countries to each other. However, even within countries, different periods reflect very different public perspectives on SS or CE schooling which could have an impact on related research. A good example of this is the direction of educational initiatives and press coverage in Australia over the past 30 years. In the 1970s, SS schooling

was portrayed as old-fashioned and as limiting the resources and the aspirations available to girls. In the 1980s, a revised view portrayed CE schools as possibly damaging to the achievement of girls. In the 1990s, a new issue has been the possibility that SS schooling gives girls advantages over boys and harms boys by limiting their classroom access to more academically successful girls. It is entirely possible that the design and interpretation of research during each of these periods may have reflected somewhat the attitudes that were ascendant during each period. Thus, until some empirical basis is devised for including or excluding research from various countries and various periods, meta-analytic resolutions cannot be properly attempted without fueling even further controversy. Other useful suggestions for further research, based on a conference of experts, are summarized by Hollinger (1993).

Individual differences. Most noteworthy is a lack of concern with individual differences. The authors and investigators have generally operated from a policy or philosophical perspective, without considering that separate-sex schooling might be best for some students, whereas others might thrive as well or better in CE institutions. The current premise, that type of schooling is a so-called "strong situation" (Mischel, 1977), which swamps individual differences, may not be tenable. These types of distinctions are addressed in other realms of applied psychological research under the rubric of person-vocation fit (Holland, 1985; Meir & Navon, 1992), person-job fit (Edwards, 1991), or person-organization fit (Chatman, 1989; B. Schneider, 1987) and need to be included in studies of school type. Though individual differences were not the focus of their study, Payne and Newton (1990) stressed the tremendous individual differences within schools in attitudes toward coeducation, among both students and teachers. The various individual difference variables associated with females' success in high school mathematics (Stallings, 1985) could also be relevant to considering SS schools or classrooms as options. The aforementioned work of Caspi (1995) regarding onset of puberty and delinquency certainly argues for greater attention to individual differences and moderator effects. In addition, as mentioned earlier, comparisons of CE and SS schooling on any number of dimensions generally takes as a given that each school of either type embodies the qualities or deficiencies typical of that form, without considering the possibility that within-type differences due to variables such as locale, school tradition, school administration values and ideologies, and student body characteristics may be greater than between-type differences (Bone, 1983; Kenway & Willis, 1986).

Especially when considering school-level effects and individual-level effects, or effects of different aspects of school situations, newer statistical procedures such as hierarchical linear model analysis (HLM; Bryk & Raudenbush, 1988, 1992), in addition to multidimensional scaling and cluster analysis (Pintrich, 1994), should be used to the fullest. Rather than choosing either the individual student or the organizational context of an educational setting (such as CE versus SS), HLM allows for the development of a multilevel model that can assess the effects of change as a function of both. There are indications that previous findings using OLS regression rather than HLM may have underestimated the positive effects of SS schooling (Lee, 1993).

Is coeducation the issue? In a study of 86 classrooms in CE, male-SS, and female-SS high schools, Lee et al. (1994) demonstrated consistent evidence of

sexism in all classroom settings, though the form and severity of sexism varied both between and within type of school. This has led some to question whether CE versus SS schooling is still the issue, given that (a) neither form of schooling is inherently immune to sexism and (b) specific efforts to remedy sexism must be undertaken in all schools (Lee, 1993).

Unfortunately, this perspective reduces all arguments for SS schooling to whether or not they alleviate sexism, thereby dismissing all other theoretical assertions made about either type of schooling. Issues of minimizing "rating and dating" in schools, opportunities to engage and excel in sex-stereotypic disciplines, access to same-sex role models, improved male bonding, discipline issues for both sexes, religious or moral concerns, and increased leadership opportunities for women should still be salient, even if type of schooling had no impact on sexism. Attempted all-male classrooms for inner-city youth were certainly not meant to be judged primarily by whether they reduce sexism. Thus, while type of schooling may not provide a complete solution to sexism in society, it certainly would appear premature to deny the salience of school type across all criteria. For this reason, many continue to see SS education as worthy of further attention (Bednall, 1993; Fox-Genovese, 1994; Gilbert, 1993; Hawley, 1993; Riesman, 1991; Riordan, 1993; Sutherland, 1985; Tidball, 1993).

Success versus preference. Another area of concern is the confusion between what students favor and what students may actually find more beneficial. There may be powerful social-desirability motives propelling adolescents to declare a preference for coed, more sociable schools, such as not wishing to be seen as prudish, as fearful of daily contact with the opposite sex, or as having a same-sex sexual orientation (Riesman, 1991). Whether CE schools are also more threatening and/or distracting to these students, as other studies imply, may not be clearly determined from self-report measures that merely assess global preferences. Hawley (1993) argues that adolescent preferences for CE schools have no more validity than preferences for less arduous course requirements or homework. A related issue is whether teachers' preferences for having coed schools for boys, in order to ease control and discipline, should really be a consideration in the face of potentially greater gains from SS schooling. One would hope that teachers would attempt to master methods of discipline in settings that are optimal for student growth, rather than opt for settings that accommodate students to teacher comfort.

Lack of male SS research. It is significant that the majority of research studies on coeducation are concerned with the academic and socioemotional benefits of CE or SS schooling for women. Seemingly, arguments that SS schooling benefits males either have received less attention and support or have been insufficient to override resistance to what critics perceive as preserves of male dominance. In addition, claimed benefits that would be unique to male-SS schools (Allen, 1990) are given little attention or are dismissed as subterfuges for "real" reasons, such as maintaining male societal prerogatives (Goodman, 1991). For some, SS schools for females are valued for promoting equality, whereas SS schools for males are viewed as promoting inequality (McGough, 1991). Great care must be taken in assessing the relative importance of goals when advocating change. For example, Lee et al. (1994) suggest using more female teachers in male-SS schools in order to counter sexism, a policy that would come at the expense of having same-sex role models for males. Not surprisingly, some advocates of SS for women have

come to the defense of the all-male academies (Fox-Genovese, 1994; J. F. Harris, 1991; Riesman, 1991). Thus, it seems imperative that more studies be undertaken in which males are the focal population and in which the addressed criteria are those most salient for males.

Legal constraints. One impetus for reevaluating the potential benefits of SS schools has been their feared demise, primarily as a result of Title IX legislation and other legal concerns. As described above, this was not the intent of Title IX, and Title IX has had other unexpected and counterproductive effects as well (Fishel & Pottker, 1977; Sperber, 1990). Even experts profess confusion about what single-sex school and classroom arrangements are allowed under Title IX and the 14th Amendment (Moore, 1993). Clearly, more clarification is needed about what is even feasible in the current legal and political climate.

Conclusion

This paper describes opposing views on the efficacy of coeducation compared to single-sex education, as well as research evidence for and against both types of arrangements. While the predominance of research certainly shows a role for single-sex schools (as an option if not a norm), much additional research is needed to clarify which individuals or target populations would gain most from such schooling. Directions and methods for additional research have been suggested. However, it is also noted that without clarifying whether the needs of those who would benefit from SS schools or classrooms can be legally accommodated within the framework of publicly funded education, the issue may become moot just as the research becomes most sophisticated and the evidence most compelling. Thus, rather than leaving the legal and policy battlefield to self-serving interest groups and lawyers, a primary concern should be informing the subject of school type with carefully controlled, high-quality research that can affect behavior and policy and best serve the needs of all students.

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