THEORETICAL ARGUMENTS FOR AND AGAINST SINGLE-SEX SCHOOLS: A CRITICAL ANALYSIS OF THE EXPLANATIONS

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EXECUTIVE SUMMARY

The question of whether single-sex (SS) schooling is preferable to coeducation (CE) for some or all students continues to be hotly debated. Much of the debate is philosophical and would be waged even if single-sex schooling were shown to be highly advantageous for one or more subpopulations. However, the actual research evidence, although suggestive that SS schools can benefit some students in some realms of academic and socio-emotional accomplishment, is equivocal. As a result of the obstacles to conducting true randomized experiments, few or no studies have provided definitive evidence for or against SS schooling.

In addition to the difficulty of establishing a causal link between school organization (SS or CE) and desired outcomes, the mechanisms by which SS schools are purported to cause these desired outcomes are unclear. A number of theories, rationales, or explanations have been advanced to account for why SS schools may be more effective. Conversely, a number of rationales have been advanced for why SS schools may be harmful or less effective than CE schools. On closer inspection, most of these explanations are problematic for one or more of the following reasons:

1. The explanations do not specify what outcome(s) SS schools purport to affect and by what mechanism.

2. The explanations do not clarify whether these effects *require* SS schools or whether they are just more typically found at SS schools.

3. The explanations do not specify whether SS schools would be expected to affect all students. For instance, it is possible that the claimed benefits would help males but not females, high school but not elementary school students, or subsets of each.

4. The explanations reflect processes leading to outcomes that may be desirable to an external interest group but do not necessarily benefit the students or support the wishes of their parents. Conversely, SS schools may lead to desired outcomes for the students or their parents but may contravene the societal goals of external interest groups.

5. The explanations may reflect differences between SS and CE schools that were true at a given time or under a given aegis that would no longer be applicable if SS schooling were attempted in public schools equivalent in size and structure to other public CE schools.

Even arguments that on the surface seem intuitive and obvious may contain untested or erroneous assumptions. For example, a common explanation for the benefits of SS schools is that males are often distracted by the presence of females in their classes. Obviously, this would not be a problem in an SS school. At first glance, this is so commonsensical that it needs no further elaboration. However, the statement makes certain assumptions that could be evaluated empirically, and other assumptions that are more philosophical in nature.

The inability to make clear theoretical hypotheses hampers research in this realm because it reduces a very complex issue to an endless series of all-or-nothing studies, all summarized as being "equivocal." It also forces or allows arbitrary, implicit decisions about which outcomes or affected populations are more important than others. If the theoretical rationales that are worthy of further study and their intended populations and outcomes are specified, future research can be conducted in a more compelling fashion. Advocates for both sides will be more likely to accept research that has specified its claims and has stipulated in advance what would or would not be evidence of worthwhile outcomes. In addition, by laying out competing goals and outcomes, advocates might be more likely to honestly specify their own hierarchies of worthwhile outcomes so that philosophical debate is not confused with empirical debate. Hence, the primary purpose of this paper is to enumerate, categorize, and critique extant explanations for why SS schools should be more or less effective than CE schools, in what realms, and for what outcomes.

Mediator and Moderator Variables

In addition to explanatory, or mediator, variables that explicate the relationship between SS schooling and important outcomes, other variables may also affect the relationship. Moderator variables may change or limit the relationship in important ways and show that SS schools are effective or ineffective only in some situations or only for some groups of students. One obvious moderator is the sex of the student: SS schools may affect girls differently than they affect boys. Also, the level or age of the students could moderate the effects of SS schools; for instance, they could be more beneficial for students in high school than elementary school. Further, specific personality or developmental characteristics of boys and girls might moderate the effects of SS schooling. For example, timid girls might get lost in CE schools but flourish in an SS setting (where they do not have to compete with boys). More aggressive girls, however, might prosper in either type of school.

A number of authors have also proposed that SS schools are particularly effective for students of lower socioeconomic status, and perhaps specifically for those who are members of minority or disadvantaged communities. This might be another important moderator. Given that African American students significantly underperform in standard CE schools, some advocates have claimed that SS schools allow an academic culture that can improve this situation. This moderator and others are more fully explored in the rest of this report.

Proposed Explanatory Variables

The proposed explanatory mechanisms that are said to operate primarily or exclusively in SS schools and lead to advantageous outcomes are listed below. They are followed by the proposed explanatory mechanisms that are said to operate primarily or exclusively in SS schools and lead to disadvantageous outcomes, or the mechanisms that are found only in CE schools that lead to positive outcomes or prevent negative outcomes.

It is important to note that the explanatory variables do not operate in a vacuum because multiple variables may be working simultaneously. In fact, a combination of such factors may be necessary for the success of SS schools. For example, an academic subculture may be a necessary condition for positive role models to be emulated. Similarly, a lack of distraction may be a necessary precursor for a consideration of nonstereotypical coursework or extracurricular activities. Thus, although we evaluate each explanatory variable on its own merits, we recognize that in reality, some may have direct effects on outcomes and others may set the stage for the primary mediators to operate. This possibility will also affect future research studies because it makes it more difficult to evaluate the arguments empirically.

Proposed Explanations in Favor of SS Schooling

➢ SS schools promote a subculture that allows minority youth to focus more on academics and succeed more than if they were in CE schools.

➢ SS schools promote a subculture based on academics, whereas the subculture of CE schools is based more on sex and sports.

➢ SS schools promote a subculture that allows girls to feel good about receiving good grades, whereas girls in CE schools feel pressure to not outshine males academically.

➢ SS schooling can counter gender inequity in the classroom by reducing any type of sex bias in teacher-student interactions.

➢ SS schools provide more positive same-sex peer role models who help socialize students into a more academic and less stereotypical environment.

➢ SS schools provide more same-sex adult mentors and role models who are able to positively influence the students.

➢ SS schools allow greater sensitivity to sex and gender differences in ways of learning.

➢ SS schools allow greater sensitivity to differences in male and female maturation.

➢ SS schools allow greater sensitivity to differences in optimal discipline for males and females.

➢ SS schools promote student bonding and an atmosphere that fosters a strong sense of community.

➢ SS schooling allows students to learn gender-specific life lessons in a more candid and comfortable school environment.

➢ SS students are more comfortable deviating from norms and expressing within-sex differences.

- SS schools capitalize on known preferences for friendships and other associations with members of the same sex.

- SS schools provide more opportunity for students to be in leadership roles.

- SS schools provide a more comfortable environment and more opportunity for students to take nonstereotypical courses and curricula.

- SS schools provide a more comfortable environment and more opportunity for students to engage in nonstereotypical extracurricular roles.

- SS schools provide safety from harassment and sexually predatory behavior – especially for female students.

- SS schools lower sexual distraction in the classroom for males and females.

- SS schooling aids moral enhancement in terms of reducing sexual experimentation and other risky activities.

Proposed Explanations Against SS Schooling

- SS schools do not prepare students for mainstreaming into the mixed-sex workplace and society.

- SS schooling fails to socialize and discipline rowdy males, thus potentially harming both males and females in the long run.

- SS male schools have more peer harassment.

- CE schools reduce sexual stereotypes through familiarity.

- SS schools reinforce traditional stereotypes of men and women.

- SS schools do not succeed in changing boys' sexist attitudes.

- SS schooling reinforces traditional and stereotypical gender roles.

- Separating girls so that they can do more "male" activities and courses is a capitulation to male sexist values.

- The existence of SS schools allows CE schools to resist the change from sexism because some parents use SS schools as an alternative, instead of forcing the change.

➢ SS schools lead to male (or female) bonding that can be construed as developing exclusionary (and even discriminatory) networks and cliques which can affect the success of students even many years after schooling.

➢ Female-only schools have fewer resources than male-only and CE schools; hence, they have poorer schooling.

➢ It is expensive and wasteful to have parallel programs for males and females.

Evaluating the Proposed Explanatory Variables

In reviewing and subjecting these possible explanations for and against SS schooling to critical analysis, we found that virtually all have unanswered questions about their precise meaning, whether they are in fact mediators, the basis for their assumptions, or their eventual outcomes. It would be premature to state categorically that some are better or more promising than others, and we encourage additional research on most of them. However, we believe it is worthwhile to provide some criteria for which ones are most worthy of further research efforts. These are some of the possible criteria.

Intrinsic versus possible / typical. Some arguments for SS schooling are inherently true, such as less opportunity for cross-sex harassment, or are true *if the explanation matters*, such as the argument that SS schools have less cross-sex distraction. Others may be typical of SS schools, such as more same-sex teachers or more leadership opportunities, but do not necessarily occur. For example, it may be true that SS schools typically reinforce sexual stereotypes, but it does not have to be that way.

The only solution versus a solution. Some arguments state that SS schooling is the only way to achieve a gain or reduce a problem. For instance, arguments based on differences in maturation or discipline needs or the ability to discuss gender-specific topics would require the separation of sexes (although separate classes could be sufficient). Other arguments, such as more adult role models and increased likelihood of taking nonstereotypical courses, argue only that SS schooling will make these opportunities more likely or feasible.

Proactive versus defensive. Some arguments present SS schools as safe havens from negative aspects of CE schools, such as pressure on girls to downplay their intelligence, freedom from harassment, or freedom from distraction. By contrast, others see SS schooling as providing value-added benefits, such as an increased sense of community or pedagogy customized to the learning styles of a particular sex.

Stand-alone versus dependent. Some explanations are seen as viable for any SS school, such as pro-academic subculture or reduced sexual distraction. Others have typically proposed separation by sex as one component in a larger program. For instance, the claimed benefits for minority males are linked to a program that is sex-specific as well as race-separate and has a specific message stressing personal responsibility. As such, the SS component may be essential, but it is dependent on other conditions.

Important versus less important outcomes. Some explanatory variables purport to predict life-changing criteria, such as graduation rates or unwanted pregnancy. Others, such as those that predict participation in nonstereotypical activities, *may* be related to important outcomes but have yet to be shown to do so.

Benefiting students versus benefiting others. Most of the pro-SS and anti-SS explanations posit benefits or problems for the students attending the schools. However, some arguments against SS schooling may even grant that the attending students will benefit but argue that society will be harmed. For instance, some arguments maintain that students will form exclusive networks in society or that successful SS schooling will hamper efforts to improve public CE schooling.

Benefiting some or all students. Some arguments are applicable to both males and females of all ages, such as teaching gender-specific life lessons. Others are much more salient for males, such as discipline arguments, or for females, such as harassment. Some, such as maturation issues, are more salient for those in elementary school, whereas issues like academic subculture and nontraditional courses are more salient in middle school and high school. It would be misleading to simply tally up all possible arguments and use them to promote (or dispute) SS schooling for both sexes and all age and ethnic groups.

In addition, we should note that this review leads to the observation that some issues may not be resolved by any type of research, even randomized experiments, because they involve issues of philosophy and relative priorities of desired or conflicting outcomes. In the world of medicine, researchers may share a common belief that preventing death is more important than any undesirable side effects. By contrast, seemingly no benefits associated with SS schools would override the objections of philosophically motivated opponents. Even for those open to considering SS schooling as an option, there is no clear-cut way to resolve the relative importance of different positive and negative outcomes. Moreover, there is no way to resolve whether an outcome that is important to one stakeholder group, such as parents, students, civil libertarians, and feminists on both sides of the issue, should be accorded more weight than an outcome valued by another group. What would be useful would be to separate fact and evidence from fiction by converting as many claims as possible to testable hypotheses and performing the necessary research.

For those who are open to using research to determine which type of schooling is more efficacious, many of the important arguments have not been tested. Similarly, a number of criteria and desired outcomes expected to result from these explanatory processes have not been examined. Even those criteria that have received greater attention have not been tied to specific hypotheses or explanatory mechanisms. Much more work and explication are needed.

A number of research directions may be helpful in resolving if these arguments are correct and to what extent. These include the following:

1. *Randomized experiments* that would assign evenly matched students to SS and CE schools with similar resources and staffs. This would control for almost all extraneous differences in student aptitude, parental socioeconomic status, quality of teaching, and other potential individual and structural differences and allow the appropriate research on the educational outcomes for both groups. Although they would provide the best evidence, such studies are expensive and require substantial social engineering.

2. *Retrospective workplace studies* could relate SS or CE school attendance with criteria that should manifest themselves in the workplace, either soon after school or many years later. These criteria include leadership ability, ability to lead people of different genders, ability to work comfortably with the other sex, and entry into nonstereotypical occupations. Thus far, educational researchers have not studied these issues, nor have organizational researchers studied the effects of SS schooling on later job performance or related outcomes.

3. *Retrospective studies of relationships* could test the explicit or implicit claim that either SS or CE schooling is more likely to prepare young men and women for healthier and more stable intimate relationships, including marriage. In the same way that retrospective workplace studies could resolve relevant hypotheses, retrospective surveys regarding relationship and marriage stability and the quality and stability of cross-sexual relationships could help resolve many of these questions. At the same time, studies investigating the preponderance of STDs, eating disorders, and other socio-emotional issues encountered throughout the life cycle should be undertaken.

4. *Longitudinal studies* would track students from elementary or high school throughout college and into the workplace and adult relationships, using samples of individuals matched on relevant control variables. However, such studies have clear disadvantages, including expense, systematic and unsystematic attrition, and the inability to resolve pressing social questions in a timely fashion.

5. *Laboratory studies* in a controlled environment could resolve some of the claimed advantages of SS schools that are descriptions of basic functioning, such as the claim that boys are more distracted in the presence of girls and that teachers are more comfortable discussing certain topics in single-sex environments.

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INTRODUCTION

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True randomized experiments in which students are randomly assigned to schools would be highly beneficial to this question. However, this would require significant social engineering and disruption of lives, making such studies almost impossible. In addition, correlational studies that control for all pre-existing differences between students attending the CE and SS schools could effectively address this question. However, the uncertainty about appropriate controls and the large amounts of data needed also make this research quite daunting. As a result of the obstacles to conducting such research, there have been few or no studies definitively showing evidence for or against SS schooling.

In addition to the difficulty of establishing a causal link between school organization (SS or CE) and desired outcomes, the mechanisms by which SS schools are purported to cause these desired outcomes are very unclear. A number of theories, rationales, or explanations have been advanced to account for why SS schools may be more effective (see Datnow, Hubbard, & Woody, 2001; Lee, 1997; Mael, 1998; Riordan, 1994, 2002). Conversely, a number of rationales have been advanced for why SS schools may be harmful or less effective than CE schools (Kenway & Willis, 1986; Campbell & Sanders, 2002). On closer inspection, most of these explanations are often problematic for the following reasons:

1. The explanations do not specify what outcome(s) SS schools purport to affect and by what mechanism.

2. The explanations do not clarify whether these effects *require* SS schools or whether they are just more typically found at SS schools.

3. The explanations do not specify whether SS schools would be expected to affect all students. For instance, it is possible that the claimed benefits would help males but not females, high school but not elementary school students, or subsets of each.

4. The explanations reflect processes leading to outcomes that may be desirable to an external interest group but do not necessarily benefit the students or support the wishes of their parents. Conversely, SS schools may lead to desired outcomes for the students or their parents but may contravene the societal goals of external interest groups.

5. The explanations may reflect differences between SS and CE schools that were true at a given time or under a given aegis that would no longer be applicable were SS schooling

to be attempted in public schools equivalent in size and structure to other public CE schools.

The inability to make clear theoretical hypotheses hampers research in this realm because it reduces a very complex issue to an endless series of all-or-nothing studies, all summarized as being "equivocal." It also forces or allows arbitrary, implicit decisions about which outcomes or affected populations are more important than others. If the theoretical rationales that are worthy of further study and their intended populations and outcomes are specified, future research can be conducted in a more compelling fashion. Advocates for both sides will be more likely to accept research that has specified its claims and has stipulated in advance what would or would not be evidence of worthwhile outcomes. In addition, by laying out competing goals and outcomes, advocates might be more likely to honestly specify their own hierarchies of worthwhile outcomes so that philosophical debate is not confused with empirical debate. Hence, the primary purpose of this paper is to enumerate, categorize, and critique extant explanations for why SS schools should be more or less effective than CE schools, in what realms, and for what outcomes.

DIFFERENT TYPES OF OUTCOMES

Even though advocates and researchers in this area often talk about school effectiveness, student success, and other general terms, schooling actually has many possible outcomes. Many of the outcome variables that have already been subjected to empirical research are short-term ones that can be measured concurrently during a student's time in school; thus, they are easiest to include in research studies. These initial outcomes include the following:

➢ Student academic achievement (e.g., test scores, grades)

➢ Student behaviors (e.g., drug use, violence, illegal activities)

➢ Student harassment (e.g., sexual and other types of harassment)

➢ Student interest in certain fields (e.g., based on gender stereotypes)

➢ Student attitudes (e.g., attitudes toward working women)

➢ Student academic experiences (e.g., taking certain types of classes)

In addition, many experts have posited outcomes that become available only after the student has finished school. These later outcomes include:

➢ Career choices (e.g., choice of a college major)

➢ Career success (e.g., post-secondary success)

➢ Adult relationships (e.g., successful adult relationships with members of the other sex)

➢ Adult adjustment (e.g., self-esteem)

It is important to note that these variables are quite diverse and may have very little relationship with other relevant outcomes. For instance, one would expect a strong correlation between students' interest in certain fields and students' actual career choices, but a weak relationship between student interest in certain fields and adult adjustment. Therefore, it is important for researchers to specify the types of outcomes that should be affected rather than refer to school effectiveness or ineffectiveness in global terms.

DEMONSTRATING THE VALUE OF AN EXPLANATORY VARIABLE

On the surface, an explanation for why SS schooling works (or why it is problematic) might seem self-evident to its proponents. However, on closer perusal it can be shown that most such explanations make a number of assumptions. Some of these assumptions are empirical and can be supported by previous research or tested in future research. Let us use a relatively simple example to demonstrate this point. One commonly stated explanation for the benefits of SS schools for high school males is that these students are often distracted by the presence of females in their classes. Obviously, this would not be a problem in an SS school. At first glance, this is so commonsensical that it needs no further elaboration. However, the statement makes certain assumptions:

1. Young males are distracted from paying attention to their academic studies by young females in their classrooms.

2. Distraction has a direct or an indirect effect on young males' grades, classroom behavior, sexual harassment behavior, or any other significant outcome. Therefore, removing distractions will result in positive outcomes.

3. This single source of distraction (female classmates) accounts for a relatively large portion of adolescent males' distraction from academics when compared with their other life distractions (e.g., athletics, conflicts with parents or siblings, college concerns, etc.) that occur during time in class. Removing this single distraction will reduce total distraction significantly.

4. Other options, such as single-sex classes, school uniforms, or dress codes, may not address the problem as well as SS schooling does.

5. The desired outcomes resulting from reduced distraction are significant enough to override any other negative side effects or outcomes resulting from SS schooling.

Note how each assumption contributes to the assertion that this is a reason that SS schools "work." The first four assumptions are potentially empirical questions; the fifth is philosophical and a function of a hierarchy of values that may not be shared by everyone. Each proposed explanatory or mediating variable described in this paper would need to satisfy a similar train of logic to be a compelling explanation for why SS schools work. Similarly, an

argument against SS schools would have to satisfy the same scrutiny and also present a testable hypothesis. For example, some opponents of SS schools invoke "slippery slope" arguments that SS schooling will lead to segregation in the workplace or oppression of women. This is not a theory about what is ineffective about SS schooling; if anything, it expresses a fear that such schools may be too successful and thus lead to other unintended consequences. As such, it is not a testable hypothesis and does not contribute to this inquiry.

The previous example assumes that removing distractions is a stand-alone cause for beneficial outcomes. It is also possible that removing distractions, although not sufficient in itself, is necessary for the overall benefit of SS schools for high school males and that it has a multiplicative effect when paired with other aspects of the SS environment. Nevertheless, the elements of an argument must be clarified before more complex models can be proposed. It is therefore premature to posit arguments that every possible benefit or failing of SS schooling works hand in hand without attempting to explain the value of each element.

In addition, an explanatory variable must describe a process and must satisfy a "why" or "how" question. To simply note a current correlate of SS or CE schools does not constitute a mediating variable. Thus, to state that "SS girls schools traditionally receive fewer resources than SS boys schools" or that "SS schools tend to be smaller" would not satisfy this criterion because neither is an intrinsic characteristic of SS schools. Were there to be more public SS schools, they could be as large or as small as, or have as many resources as, any CE school.

MEDIATOR AND MODERATOR VARIABLES

In addition to explanatory (or mediator) variables that explicate the relationship between SS schooling and important outcomes, other variables may also affect the relationship (Baron & Kenny, 1986). Moderator variables may change or limit the relationship in important ways and show that SS schools are effective or ineffective only in some situations or only for some groups of students. One obvious moderator is the sex of the student: SS schools may affect girls differently than they affect boys. Also, the level or age of the students could moderate the effects of SS schools; for instance, they could be more beneficial for students in high school than elementary school. Further, specific personality or developmental characteristics of boys and girls might moderate the effects of SS schooling (Caspi, 1995). For example, timid girls might get lost in CE schools but flourish in an SS setting (where they do not have to compete with boys). More aggressive girls, however, might prosper in either type of school.

Another class of moderator may be the student population and the type of schooling that is typically provided for those populations. Affluent suburban schools may have sufficient resources and a parent body so engaged in their children's achievement as to render any advantage of SS as meaningless. By contrast, inner-city, poverty stricken schools may have so many disadvantages that the environment claimed to be endemic to SS schooling would be a

greater necessity (Riordan, 2002). Similarly, a number of authors have also proposed that SS schools are particularly effective for students of lower socioeconomic status and perhaps specifically for those who are members of minority or disadvantaged communities (Riordan, 1994, 2002; Salomone, 2002, 2003). This might be another important moderator. Given that African American students significantly underperform in standard CE schools, some advocates have claimed that SS schools allow an academic culture that can improve this situation. This moderator and others are more fully explored in the rest of this report.

CRITERIA FOR INCLUSION IN THIS PAPER

Three primary types of sources were used for this paper. The first and most common type comprises articles and books that were written primarily as theoretical discussions or polemics on the subject of SS schooling or related subjects. The second is made up of qualitative studies that elicited information through interviews or other observational techniques and suggest the possibility of systematic benefits or disadvantages of SS schooling. The third source consists of quantitative studies in which a theoretical proposition was formulated as the hypothesis for the relationships to be tested or was advanced in the discussion section as the possible explanation for an observed relationship.

Although reviews of this nature frequently put limits on how dated citations can be, we did not put a specific limit on how recent theoretical writings had to be. It is possible that the conditions leading to a specific proposition may have changed, such as the treatment of girls in school and the percentage of females entering various professions or graduate programs. However, other propositions in favor of and against SS schooling are based on observations of human nature that are potentially immutable despite societal changes and that may have been expressed more eloquently 40 years ago than today. Conversely, a current author is capable of repeating anachronistic reasoning. Therefore, we have used the quality and timelessness of the argument, rather than the date of publication, as our guide for inclusion.

ANALYSIS OF PROPOSED EXPLANATORY VARIABLES

The proposed explanatory mechanisms that are said to operate primarily or exclusively in SS schools and lead to advantageous outcomes are listed in Table 1. These are followed in Table 2 by the proposed explanatory mechanisms that are said to operate primarily or exclusively in SS schools and lead to disadvantageous outcomes or the mechanisms that are found only in CE schools that lead to positive outcomes or prevent negative outcomes. Each proposed variables is evaluated critically regarding its theoretical implications and its presumed relationship to desired outcomes. The evaluation of each argument takes the following form to the extent possible:

➢ The argument

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- ➢ The assumptions and premises that underlie this argument

- ➢ Counterarguments or fallacies in the argument

- ➢ Research that could support or dispute the argument

- ➢ Outcomes that this argument would or could in principle predict

Table 1: Proposed explanatory variables advanced in favor of SS schooling

Academic subcultures

- ➢ SS schools promote a subculture allowing minority youth to focus more on academics.

- ➢ SS schools promote a subculture based more on academics than on sex and sports.

- ➢ SS schools promote a subculture that allows girls to feel good about receiving good grades.

Gender equity

- ➢ SS schooling can counter gender inequity in the classroom by reducing sex-bias in teacher-student interactions.

Role models

- ➢ SS schools provide same-sex peer role models.

- ➢ SS schools provide same-sex adult mentors and role models.

Sex / gender differences

- ➢ SS schools allow greater sensitivity to sex and gender differences in ways of learning.

- ➢ SS schools allow greater sensitivity to differences in male and female maturation.

- ➢ SS schools allow greater sensitivity to differences in optimal discipline for males and females.

Cohesion and openness

- ➢ SS schools promote student bonding and an atmosphere that fosters a strong sense of community.

- ➢ SS schooling allows youth to learn gender-specific life lessons in school.

- ➢ SS students are more comfortable deviating from norms and expressing within-sex differences.

- ➢ SS capitalizes on known preferences for within-sex associations.

Greater opportunity beyond stereotypic roles

➢ SS schools provide more opportunity to be in leadership roles.

➢ SS schools provide more opportunity to take nonstereotypical courses and curricula.

➢ SS schools provide more opportunity to engage in nonstereotypical extracurricular roles.

Safety and moral enhancement

➢ SS schools provide safety from harassment and sexually predatory behavior.

➢ SS schools lower sexual distraction for males and females.

➢ SS schooling aids moral enhancement.

Table 2: Proposed explanatory variables against SS schooling

Life coping skills

➢ SS schools do not prepare students for mainstreaming into the mixed-sex workplace and society.

Behavioral problems

➢ SS schooling fails to socialize and discipline rowdy males.

➢ SS male schools have more peer harassment.

Reinforcement of sexism

➢ CE schools reduce sexual stereotypes through familiarity.

➢ SS schools reinforce traditional stereotypes.

➢ SS schools do not succeed in changing boys' sexist attitude.

➢ SS schooling reinforces traditional and stereotypical gender roles.

➢ Separating girls so that they can do more "male" activities and courses is a capitulation to male sexist values.

➢ SS schools let the CE schools resist change from sexism by using SS as an alternative for some students.

Exclusive relationships

➢ SS schools lead to male (or female) bonding that can be construed as developing exclusionary (and even discriminatory) networks and cliques.

Financial considerations

➢ Female-only schools have fewer resources than male-only and CE schools, hence poorer schooling.

➢ It is expensive and wasteful to have parallel programs for males and females.

PROPOSED EXPLANATORY VARIABLES ADVANCED IN FAVOR OF SS SCHOOLING

Academic subcultures

One overarching argument differentiating SS and CE schools has been a theorized difference in the school "cultures" of SS and CE schools (Riordan, 2002). The argument is multifaceted and subsumes three separate arguments:

➢ Many American schools servicing minority youth are characterized by an intense oppositional (anti-academic) culture that is engendered by boys and pressures these boys not to strive to succeed in school. To some extent, this oppositional culture affects minority girls as well. These effects operate over and above anti-academic cultural forces that affect girls and boys of all socioeconomic and racial groups.

➢ The typical culture of an American school, especially in the higher grades, is anti-academic and values sex and sports more than academic achievement. These effects operate to some extent in schools serving all socioeconomic and racial groups.

➢ The typical American school, especially in the higher grades, has a culture that puts pressure on girls to downplay their intelligence in order to be attractive to boys. This pressure is in addition to the anti-academic culture in those schools and operates in schools serving all socioeconomic and racial groups.

It is argued that SS schools have better, more academic cultures that directly counter these cultural forces more than CE schools do. We will discuss each argument individually.

SS schools promote a subculture that allows minority youth to focus more on academics.

The premise of this argument is that a distinct youth culture exists within specific minority communities and devalues and denigrates striving to succeed within the dominant culture's schools. This argument has been made for both minority males and females; both are discussed below.

Boys. Although the reasons are debated, the poorer performance of African American males in school as a group is not in question (Polite & Davis, 1999). In addition to having poorer scores and higher dropout rates, black male students are more likely to be labeled with behavioral problems, punished severely, excluded from rigorous classes, and labeled as less intelligent (Noguera, 2003). There are indications that even within studies limited to suburban or middle-class students, African American males lag behind whites in both grades and standardized test scores (Hawkins, 1999; Jencks & Phillips, 1998). Given the tremendous social costs and evidence that it is possible for black males to be educated successfully (Edmonds,

1979; Lee, 2000; Steele, 1992), advocates for these students argue that it behooves society to attempt any forms of education that could increase their chances for success.

Some educators believe that customized SS programs will allow minority males to reach their potential and excel (Datnow, Hubbard, & Conchas, 2001). Empirical and qualitative research has isolated the specific qualities and practices that teachers of African American males should embrace (Foster & Peele, 1999), and these could best be put into practice with a homogeneous classroom.

Oppositional Culture Theory. It has been argued that traditional educational programs devalue the ability and identity of African American boys, which may cause them to devalue achieving within the educational system and view succeeding as a capitulation to foreign values (Corbin & Pruitt, 1999; Fordham & Ogbu, 1986; Harris & Majors, 1993; Hudley, 1997; Reed, 1988; Steele, 1992). Hence, the relationship between the dominant school culture and the minority culture is synergistically destructive. Ogbu (1978, 1986) named this an *oppositional culture*, in which African American and Hispanic youth who succeed academically are harassed by their peers for "acting white" and who come to view school with resentment, anger, and detachment. These negative peer pressures override positive parenting and general proschool attitudes (Cook & Ludwig, 1998; Steinberg, Brown, & Dornbusch, 1996). In testing this theory, Farkas, Lleras, and Maczuga (2002) found peer opposition to school effort significantly greater among males than females and greater among minorities than among whites. While questioning the findings of Farkas et al., Downey and Ainsworth-Darnell (2002) found the oppositional culture theory to be theoretically appealing. The theory thus attempts to explain why schools serving minority males in economically poorer communities are characterized by violence, danger, and despair.

Riordan (2002) has argued strongly that single-sex schools are a critical means to providing disadvantaged minority youth with a structure that will allow them to combat this oppositional culture. In fact, he has come to the view that the positive effects of SS schooling for middle class youth (at least regarding academic achievement) are not significant and that the primary beneficiaries would be minority youth. However, he has included a number of important stipulations. For instance, he has claimed that SS schools should be earmarked for at-risk youth since they have the greatest need and some research suggests that they will have the greatest need. Also, the availability of this type of schooling needs to be relatively rare in the society, thereby requiring parental choice. Therefore, if SS schooling were to become commonplace or easily accessible in society, the benefits would probably be lost.

In addition, Riordan (1994) has argued that a key variable for explaining the success of SS schools is the pro-academic choice made by important stakeholders (i.e., parents, students, teachers, and principals). This argument is based on the idea that SS schools in the United States (public or private) are not forced on these stakeholders; rather, these people must make an important choice in favor of this type of school. More important, he proposes that those who choose SS schools generally share some core beliefs about the importance of education because

the choice for CE schools represents the choice for a pro-adolescent subculture. Coleman and Hoffer (1987) propose that this type of agreement creates a "value community," which allows the creation of school policy necessary for an effective school. Thus, the harmony that results from the common choice for SS schools creates a unique environment that fosters learning. More recently, Riordan (2002) has taken the position that pro-academic choice is the single most important component of the success of SS schools for disadvantaged youth. Within this model, it is virtually impossible to tease out the relative importance of the single-sex aspect and which, if any, intrinsic aspect of SS schooling is most important. It is possible that the benefits of the SS component are the sum of many or all of the other claimed benefits evaluated throughout the rest of this paper.

Certainly, other components of good education that could be found in CE schools may be equally or more significant. As Hollinger (1993) comments: "All single-gender schools are not equal in providing a productive learning environment and many factors contributing to the success of 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 (p. 11). Similarly, Hudley (1995) questions how significant the single-sex aspect of a minority-oriented school is compared with the separate or combined effects of changes in philosophy, curriculum, and teacher and peer role models. Thus, one may raise this question: If girls are the not source of the oppositional youth culture for minority males, why is their removal from the school a primary component of the solution?

The answer may be related to the finding that black students hold themselves back from certain activities in mixed race schools so that they will not be ostracized by their black peers (Fordham, 1996; Steele, 1997; Steele & Aronson, 1995). Presumably, a more homogeneous school will allow the students to express their interests more freely. This is consistent with the view (Woody, 2002) that in all-male schools, the need for conformity is reduced and intra-gender differences are more easily expressed. Therefore, one may postulate that simply removing white students without removing girls will still not combat the need for posturing that prevents minority male students from expressing interest in academics. In addition, perhaps the sense of community engendered by homogeneity is a necessary, albeit insufficient, condition for other reforms and innovations to be successful. Thus, one may pose the opposite question: Would the other beneficial changes to curriculum and philosophy be as readily embraced by students if the schools did not have the cohesive and customized atmosphere fostered by singling out students by sex and race?

Criticism: Early proposals stressed providing SS and specifically Afrocentric schooling for endangered African American males (Irvine, 1990). However, Afrocentric schooling is not the thrust of current public-sector efforts to provide SS schooling for minority males or females. Nevertheless, SS schooling for minority males is likely to be limited to minority youth for greater effectiveness (Riordan, 2002) or to have a de facto minority-only population. This racial segregation needed to achieve SS schooling geared specifically to the needs of minority youth has not escaped criticism. Although not addressing the specific issue of SS schooling, Steele

(1992) argues that "segregation, whatever its purposes, draws out group differences and makes people feel more vulnerable when they inevitably cross group lines to compete in the larger society. This...can override confidence gained in segregated schooling unless that confidence is based on strongly competitive skills and knowledge" (p. 78). If students of SS schools had higher graduation rates, higher earnings, better participation in the nonsegregated workplace, or lower incarceration rates, it would need to be clarified how negative outcomes from this segregation would express themselves and whether the effects would be sufficiently problematic or long-standing to override potential benefits. This is important longitudinal or retrospective research that has yet to be done.

Noguera (1997) has also questioned whether the focus on solutions for African American males ignores the class and social structure issues (living in decaying and impoverished urban areas) that may be more salient than race issues. Noguera (2003) has also stressed that the focus must be on changing the structure and culture of all schools so that black males will see them as supportive of their aspirations and identities. The question then becomes whether individual parents or students should wait for that type of large-scale change or whether they should have the option of SS schooling as a short-term solution.

In addition, if one argues that the parent body at an SS school is a self-selected group that is more serious and concerned about education than CE parents (Riordan, 2002), then one has opened the counter-SS argument that it is not the schooling that is better but rather the parents and students who are different from those at CE schools. Opponents would argue that in any comparison of schools, parental characteristics and aspirations would have to be controlled for in making comparisons. Just as pre-existing differences between students are considered to be inadmissible as evidence of school superiority, a parent body more interested in serious academics may also be inadmissible as evidence of school *type* (i.e., SS versus CE) superiority. Riordan (2002) explicitly disagrees with this view and feels that parental and student proacademic choice should not be controlled for. Thus, this argument remains unresolved.

Girls. Hudley (1997) and Noguera (1997) make the additional point that the focus on disadvantaged boys in the literature has ignored the problems faced by African American girls, who are also in crisis, although perhaps not as much as minority males (Zill & West, 2001). Minority girls represent two-thirds of girls in the juvenile justice system, and their pregnancy rates are significantly higher than for whites (Salomone, 2003). African American girls also may be perceived poorly by teachers (Washington, 1982) and may view themselves as treated by teachers in a matter consistent with low expectations (Marcus, Gross, & Seefeldt, 1991). Most of the current SS efforts in the public sector have been for girls, rather than boys, schools. Yet seemingly, less research has focused on why SS schooling would be especially beneficial to disadvantaged females. This is ironic, given that some of the most noticeable successes in public sector SS schooling have been schools populated primarily by minority females (Salomone, 2003).

Criteria: Results of a study by Hudley (1995) suggest that an experimental male African American SS program in California succeeded in fostering better academic confidence and a safer, more intellectually challenging climate for learning. However, the effects on actual performance and the evaluation of academics as being important were not affected. Hudley suggests that the societal problems afflicting the community might be so far-reaching that a short-term evaluation of efficacy might not indicate the long-term potential effects of such programs. Because defining manhood in socially and sexually appropriate ways is a central tenet of the programs she studied, Hudley (1997) suggests that a reduction in teen pregnancies perpetrated by male students and higher rates of stable, two-parent families might be appropriate criteria. The same could be said for a record of stable employment, reductions in gambling, increased savings rates, and other indicators of responsibility. In the section on adult role models, we also discuss reduced placement in special education classes as a potential criterion of success. In summary, a wider range of short- and long-term criteria should be used to assess these schools.

In contrast to the views of Riordan (2002), which focus the issue of SS schooling solely on minority youth (especially males), a number of SS schooling advocates and detractors continue to describe the advantages and disadvantages of SS schooling in ways that are relevant to all socioeconomic and racial groups (Campbell & Sanders, 2002; Streitmatter, 1999). Indeed, studies that evaluate SS schooling in societies where it is more common continue to find positive effects (e.g., Spielhofer, O'Donnell, Benton, Schagen, & Schagen, 2002). Perhaps for those students of higher SES and more advantaged racial groups, the need is less urgent, the room for improvement less great, or the criteria of interest less significant. Nevertheless, they are part of the ongoing debate about SS schooling. Thus, most arguments in the rest of the paper are relevant to students in all socioeconomic groups, whether male or female.

SS schools promote a subculture based more on academics than on sex and sports.

SS high schools are claimed to have more serious and studious climates, which are more immune to the dominant "rating and dating" culture of CE schools (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 "subjected to intense sexual distractions and competitions during the critical stages of their educations [and] driven in to periods of sexual experimentation and stress unparalleled in either length or intensity by any other societies" (Gilder, 1973, p. 210; cf., Kolesnik, 1969). By contrast, SS schools are seen to have a more academic orientation (Jones, Shalcross, & Dennis, 1972; Trickett, Trickett, Castro, & Schaffiler, 1982).

The starting point of this argument is that typical American junior and senior high schools have cultures that are resistant to the influence of teachers, administrators, and parents. Qualitative studies depict students as uninterested in grades, teachers, assignments, and substantive subject matter (Cusick, 1973; Eder, Evans, & Parker, 1995; Everhart, 1983). Specifically, CE school cultures are seen as dominated by two components: a focus on sexual

activity or posturing and a glorification of sports and varsity athletes. Teachers in these studies are portrayed as generally complicit in lowering the expectations and aspirations of students, and the glorification of athletes over high achievers in academics or other realms may be school sanctioned to some extent (Bank, 1997). Even though dedicated school administrators, faculty, and guidance counselors are interested in promulgating a pro-academic culture, the structural conditions of modern schooling and parental attitudes allow these cultures to remain – despite counterefforts and the constant turnover of students (Coleman, 1961; Goodlad, 1984).

The primary premise of this argument is that in an SS school, students are afforded down time during which they do not have to be concerned about how they are perceived sexually. The "psychic energy" freed up by the separation of the sexes is presumed to be available and diverted to academic study. Certainly an SS school will provide fewer opportunities to "fan the flames" of adolescent obsession with sex. For boys, this may relate to reduced distraction and reduced demands to play a certain role. For girls, it may relate more to being freed from acting dumb and from fearing harassment, an issue that is discussed below. However, why these youth, simply by being released from rating and dating issues, will spend more time and energy on academics is not clear. There appear to be an underlying assumption and potentially testable proposition that adolescents want to learn and would do so if distractions and pressures were removed from their lives.

Conversely, the premise that youth in SS schools are more immune to a culture obsessed with sports is questionable. All-male academies in the United States and abroad have long had a strong tradition of prioritizing athletics and promoting the ethos of a "strong mind in a strong body" (Higgs, 1995). Shmurak (1998) found that participating in athletics is advantageous for girls' self-efficacy and should be part of the solution rather than the problem. If real CE-SS differences exist on this dimension, it may be the *intersection* of sports and sex. This would involve glorifying male athletes and female cheerleaders (Eder et al., 1995; Riordan, 1990) and using those roles for sexual advantage, which is the hallmark of the CE schools implicated for their anti-academic cultures.

It is important to note that the notion of organizational culture is multidimensional; therefore, it can have many different meanings (Ashkanasy, Wilderom, & Peterson, 2000). Because of this, it would be useful to describe the elements of SS culture that purportedly contribute to positive outcomes. In addition, it would be important to specify and operationalize the purported components of "youth culture" said to typify CE schools to specify what harm each component is expected to contribute to academics and other outcomes and to explain why SS schooling (and SS schooling alone) is antithetical to this youth culture.

Criteria: Presumed outcomes of a more academic youth culture in SS schools would be academic performance, more ambitious career aspirations, and academic confidence. Other potential outcomes, such as long-term healthy attitudes toward the other sex or the quality of subsequent intimate relationships, have not been proposed or studied as a function of culture.

SS schools promote a subculture that allows girls to feel good about receiving good grades.

Some perceive CE schools as detrimental to women (Arnot, 1983; Chafetz, 1990; Kauermann-Walter, Kreienbaum, & Metz-Gockel, 1990; Rossi, 1987; Sarah, Scott, & Spender, 1980; Shaw, 1976) because females in CE schools are pressured to not outshine males, to obsess about clothes and hair, and to adopt a "silly or silent" demeanor. Females receive mixed messages about their ability to both excel academically (especially in mathematics and science) and be attractive to boys (Blackstone, 1976; Hamilton, 1985). The assumed value of this lack of pressure is that by removing boys, girls and young women will be more willing to express and explore their intelligence (Cipriani-Sklar, 1996; Shmurak, 1998) and to downplay the focus on appearances during their schooling. For instance, Gallagher (2002) reports that when the subtext of sexual tension and efforts to impress males is removed, female SS high school students involved in artistic endeavors feel more comfortable expressing themselves creatively. This relatively uncomplicated hypothesis is separate from any arguments of institutionalized gender inequity for women (Bailey, 1993). The pressure is presumed to come from male peers and perhaps from female peers as well, whereas inequity arguments fault teachers and administrators.

The assumed outcomes of this argument are more time spent on homework and academic activities, more willingness to entertain nonstereotypical academic and extracurricular pursuits, and less self-consciousness in the classroom and in school. Further, possible long-term implications for performance (e.g., behavior in the workplace) and adaptation (e.g., obsession with looks and aging, eating disorders) need to be examined as well.

It is not as commonly argued that males downplay their intelligence to be attractive. Thus, the presumed benefits of SS schooling in this realm, such as less need to show off or put up a hypermasculine front, have neither been as clearly suggested nor linked to outcomes other than the possibly greater choice of nonstereotypical courses and pastimes. However, nonstereotypical choices have typically been treated as an explanatory variable rather than as an outcome variable in itself.

Gender equity

SS schooling can counter gender inequity in the classroom by reducing sex-bias in teacher-student interactions.

Some have argued that SS schools could provide antidotes to classroom gender inequity (cf., Bailey, 1993; Epstein, 1988; Graham, 1974; Keohane, 1990). Streitmatter's (2002) qualitative data indicate that girls appreciate an environment in which they are neither competing with boys for teachers' attention nor being distracted by boys' more aggressive behavior. The primary issue of gender equity is the argument that teachers in mixed classrooms shortchange girls (Sadker & Sadker, 1994). Early research advanced the idea that males received not only more attention but also more praise and less criticism for the quality of their work (Dweck, Davidson, Nelson, & Enna, 1978). The commonly proposed solution is the single-sex classroom

in a CE school, one that does not require a completely separate school. However, some have maintained that because CE schools are inherently male-oriented and male-dominated institutions, nothing less than SS schools will achieve equity. The premise is that without boys in the classroom, teachers will be forced to give girls the attention and the voice they deserve. Although detractors argue that this approach avoids the realities of the mixed-gender college or workplace, advocates claim that by providing girls with opportunities to express themselves during elementary and secondary school years, they will gain the self-esteem needed to compete in a mixed environment later in life.

However, the status of girls in schools has greatly improved in the past few decades (Salomone, 2003), and the need for such protection may not be as obvious. It is also not evident that greater attention in class is better quality attention, and it may be that much of the attention received by males is disciplinary rather than supportive (Younger, Warrington, & Williams, 1999).

Another stream of research argues that it is boys who are shortchanged in the classroom (Kindlon & Thompson, 1999; Pollack, 1998). Even if it were shown that males speak up and are attended to more in the classroom, the result has not been better academic outcomes for males (Kleinfeld, 1999; Riordan, 2003; Sommers, 2000). Boys have poorer writing skills, are three times as likely to be enrolled in special education classes, and attend college at a lower rate (Bae, Choy, Geddes, Sable, & Snyder, 2000; Hedges & Nowell, 1995; Smith et al., 1995; Willingham & Cole, 1997). As summarized by Rowe and Rowe (2002), "Boys, on average, achieve at significantly lower levels than girls on all areas of the assessed cognitive curriculum throughout their primary and secondary schooling" (p. 2).

Pollack (1998) charges that CE schools fail boys in four ways: they do not pay enough attention to difficulties boys have in reading and writing; they are poorly versed in the specific social and emotional needs of boys; teachers and administrators are ill equipped or misguided in their approaches to disciplining boys; and curricula, classroom materials, and teaching methods are geared to girls and do not take boys' needs into consideration. SS schooling has been proposed (Pollack, 1998) as one possible antidote to this trend. Some of the specific arguments about boys' differing maturation rates and needs for different types of discipline are discussed below as separate variables.

Role models

SS schools provide same-sex peer role models.

Some have also claimed that females benefit from SS schools because of a greater likelihood of having same-sex peers pursuing serious academic and leadership roles (Finn, 1980; Lee & Bryk, 1986; Tidball & Kistiakowsky, 1976). It has similarly been claimed that if disadvantaged male students have peers who are serious about and committed to academics, it

becomes more socially acceptable for them to also take school seriously. Each assertion comes from a different set of premises.

For girls, the assumption is not that they need to be socialized into studying. Rather, the claim is that their aspirations are artificially deflated in a CE environment. This theory assumes that when girls enter a girls-only school, a certain number will flock to nontraditional courses and extracurricular activities, in part because they have been freed from the dating-oriented and dumbing-down culture of CE schools. Although some girls in an SS school will continue to make traditional choices and will find the traditional girls more impressive role models, a significant number will find girls who are making (and succeeding at) nontraditional choices to be the more relevant or primary role models. If this is so, then using global measures of school-wide increases in nontraditional studies or college majors as a criterion of success may be misguided. The theory would postulate only that more girls in SS schools would have the *option* of identifying with peers who, for example, choose to major in science or engineering. However, an alternative hypothesis might be that SS schools actively push girls into taking nontraditional courses and participating in nontraditional extracurricular activity. In this case, a girl entering an SS school would have many or mostly nontraditional peer role models, and all students would be expected to follow suit. The first view is an individual-level hypothesis, stressing more options and greater ability for self-expression of latent tendencies; the second view is a group-level one, that the culture in an SS girls' school moves girls inexorably toward different types of aspirations.

Both versions make certain assumptions about the relative influence of peers compared with the influence of parents and other authority figures or intrinsic personal characteristics in making academic, extracurricular, and career choices that may or may not be supported in the career literature (Osipow, 1983; Super & Overstreet, 1960). In addition, although advocates of this viewpoint assume that nontraditional choices are inherently better than traditional ones for girls, they do not specify whether these are the goals of students, parents, or external forces. The notion that capable girls limit themselves to traditional roles when they could succeed in "male" professions is commonly assumed. However, the possibility that girls may be pressured to enter nontraditional roles in which they are not interested has not been given equal consideration.

For boys, the assumption is that the culture in an SS school will promote a pro-academic attitude (essentially, a previously asserted reason for favoring SS schools). And, it is assumed that this culture can be quickly rooted and maintained so that new students are immediately socialized into a pro-academic, anti-youth culture attitude. What is missing is a theory about why the teachers or administrators of SS schools are more likely or more able to foster such a culture and whether that would be feasible in a public school setting. If a new SS school for disadvantaged students were to be formed, it is further assumed that the new students would be all somehow socialized at once. Having all current students socialized would allow easier socialization of later students, who would have role models in place and would be relieved of peer pressure to not take academics seriously. What needs to be clarified is the tipping point –

the percentage of students who need to be succeeding academically in order to make scholastics socially acceptable. Also, research needs to determine how other student concentrations, whether sports, gang membership or anything else, are neutralized in order to validate the choice to succeed academically (Hudley, 1995). In addition, the effects of negative role models should be dealt with. A model of these presumed processes needs to be explicated and tested.

SS schools provide same-sex adult mentors and role models.

Direct scholastic benefits for girls in SS schools have also been claimed because of more opportunity to have talented female teachers and role models (Finn, 1980; Lee & Bryk, 1986; Tidball & Kistiakowsky, 1976). Presumed outcome measures for girls would be higher and less traditional career aspirations. Paradoxically, although students would be exposed to female mathematics and science teachers, teaching is a traditional career option, making it unclear why such teachers would spur significantly different aspirations. It is possible that this theory was developed primarily with SS colleges in mind, in which most instructors have advanced degrees and may also work as practitioners, and then assumed to have the same value at the high school level.

In addition, some argue that it is particularly important for disadvantaged boys who do not thrive in CE schools dominated by female teachers to have male role models (Hanson, 1959; Levine, 1964; Holland, 1987). By contrast, in more affluent communities, male teachers may not be viewed as impressive role models by high school students or their parents (Lee, 1997). Similarly, Sturtevant (1995) provides evidence that minorities also do not necessarily view teachers as impressive role models. Also, because of the greater number of women than men entering the education field, it may be harder for all-boys schools to achieve this goal of same-sex role models (Riordan, 1990). Presumed outcome measures for boys would be higher academic aspirations and performance and other measures of responsible attitudes.

Some authors maintain that teachers tend to recommend students for special education placement who are racially dissimilar to themselves (McIntyre & Pernell, 1985, p. 112). The overrepresentation of African American youth among those labeled learning disabled, especially males, may be related to the lack of African American teachers in both general and special education and the cultural assumptions of white, primarily female, evaluators (Harry & Anderson, 1999). It therefore would be postulated that in schools with sufficient male African American teachers, fewer students would be designated learning disabled and removed from the mainstream classroom. This is a testable proposition with important implications that should be studied for both minority males and females.

Interestingly, noted SS educator Benjamin Wright has argued that minority girls also need more positive male role models (Wright, 2004). Additional research needs to address his view that male role models will do more good in an SS girls' school than in a CE one. In addition, given the demand for male minority teachers, one must question whether their

deployment at a boys' school would be as important as what they might accomplish at CE or girls' schools.

Sex / gender differences

SS schools allow greater sensitivity to sex and gender differences in ways of learning.

Some see inherent male/female differences in the pace and style of physical and cognitive maturation, learning, and social and moral development. For example, some SS educators adjust their teaching methods to give girls the opportunity to work in cooperative groups, whereas boys are taught in a more traditional setting (Datnow, Hubbard, & Woody, 2001). However, the acceptability of believing that such differences exist is a matter of controversy among some feminists and scholars of gender equity (Belenky, Clinchy, Goldberger, & Tarule, 1986; Gilligan, 1982; Salomone, 2002). From the view that there are differences, SS schools can be tailored to each sex's unique needs (Gilbert, 1993; Tidball, 1993). Among the posited intrinsic group differences that would have implications for the type of schooling are that males exhibit greater spatial ability, leading to their stronger interest and proficiency in mathematics, and that females get better grades because they tend to be more obedient and easily socialized into the role of a student. How educators in SS schools behave differently to capitalize on these differences is less clear and a matter for empirical research.

The critics of the view that males and females show differences in skills (Bank, 1997; Campbell & Sanders, 2002) make the following points:

➢ The differences between the sexes are too small to be important. Research shows that within-sex differences in mathematics skills, verbal skills, and other significant characteristics are larger than between-group differences (Bank, 1997). This criticism suggests that because group *outcomes* are similar, the two groups optimally use the same methods to get to the same outcomes; therefore, they should be taught in the same way. However, assume for a moment that females compensate for lesser interest or ability in mathematics by being more studious and less likely to miss school. Although the resulting group scores might be similar, they would actually say little about the two sexes being similar in their ways of learning and about optimal ways to spur greater interest and performance in each.

➢ In their argument against SS schooling, Campbell and Sanders (2002) state that there are virtually no male-female differences in mathematics skill. Interestingly, they subsequently note that the gap between males and females in *interest* in science and technology is long-standing and seemingly intractable in both CE and SS environments. However, taking differences in interest into account could result in different styles of teaching or presenting material that would be optimal for each. Although achievement test scores may not be the proper criterion, girls having higher aspirations and

disadvantaged boys staying in school may be affected directly by improved learning environments.

➢ Bank (1997) states that evidence of natural differences between males and females is based on subjective opinions of teachers, which are inherently biased and flawed, and on standardized tests, which are based on arbitrary suppositions. From this perspective, it would be impossible to use any form of evidence to demonstrate that there are stable differences *as a group* between males and females. Ironically, Bank's argument that there are no stable and significant male-female differences was based on the results of some standardized tests.

➢ Bank (1997) concludes her arguments by stating "finally, the assumption of 'natural' gender differences is considered by many to be a sexist argument designed to resist change, to justify the oppression of women, and preserve male power and privilege" (p. 8). Bank thus states that all sources of evidence are invalid, and even if there were valid evidence of differences, the evidence would be unacceptable because it might support the ulterior motives of sexist powers. It would thus be impossible to demonstrate *any* male-female differences or improve pedagogy on the basis of these differences.

Thus, multiple questions remain. Would different methodologies, classroom styles, or any other pedagogical or classroom management practices result in any desired outcome (e.g., increased interest in the subject matter, improved scores for weaker students, or any other important criterion)? Also, what would the mechanism be and what *specific* "different ways" have been tried and found to make or not make a difference? What outcomes would demonstrate the efficacy of these methods? Such questions need to be specified in future research. Another question involves the possible role of "strength of gender orientation" as a moderator of the effects of teaching style. For example, it is possible that students with more extreme scores on measures of masculinity and femininity (Constantinople, 1973; Spence & Helmreich, 1978) would be more affected by teaching style and school organization than those with scores closer to the mean on both dimensions.

However, evidence of intrinsic differences and knowledge of distinct ways to optimize the learning of boys and girls would not support the effectiveness of SS schooling per se. The reason is that unless the preferred way of teaching females or males is enunciated as part of school policy, there is no reason to assume that it is being practiced in the SS school (Datnow Hubbard, & Woody, 2001). Comparing multiple SS schools using different philosophies and approaches to teach and treat females or males would be a more appropriate test of sex-specific styles than comparing SS schools with CE schools. For example, a comparison of SS girls' schools with CE schools on the question of whether SS girls get more sex-specific teaching would have to make two questionable assumptions. The first is that all or most teachers in SS girls' schools gravitate to more sex-specific appropriate styles of pedagogy. The second is that CE schools, even those with a great preponderance of female teachers, are essentially male-

dominated and conducted in a way to maximize the learning and comfort level of males (Marshall, 1997). The first assumption would have to be demonstrated empirically or by careful qualitative study; the second is not really a provable or falsifiable claim.

SS schools allow greater sensitivity to differences in male and female maturation.

People who see inherent male-female differences in the pace and style of physical and cognitive maturation, learning, and social and moral development (Gilbert, 1993; Tidball, 1993) view SS schooling as best tailored to each sex's unique needs. SS advocates argue that CE does not allow for the different forms and timeframes of male maturation and does not acknowledge the maturational gap that exists at birth and increases somewhat throughout early childhood (Tanner, 1971). This position assumes that greater tendencies to restlessness and aggression among young males are innate tendencies stemming from their shorter attention spans and higher energy levels (Gilder, 1973; Hawley, 1993; Riesman, 1991; Salomone, 2002; cf., Schneider & Coutts, 1982). Hawley (1991) argues that a homogeneous school program will not be calibrated to the needs of either boys or girls. Recent research demonstrating that boys lag behind girls on various indices of school readiness supports this view. For kindergartners, girls are slightly ahead in reading, have more positive attitudes toward classroom tasks, and exhibit more pro-social behavior; boys experience twice the developmental difficulties and are more prone to problem behavior (Zill, Collins, West, & Hausken, 1995; Zill & West, 2001).

SS schools allow greater sensitivity to differences in optimal discipline for males and females.

SS advocates argue that CE does not allow for the optimal discipline and structure needed by young males (Gilder, 1973; Hawley, 1993; Riesman, 1991; Sexton, 1969; cf., Schneider & Coutts, 1982). Effective discipline is an important issue because many of the problems that boys encounter at school stem from behavioral issues rather than learning ones. For instance, research shows that boys are much lower in "engagement with learning" (Lee, Chen, & Smerdon, 1996) – more likely to misbehave, skip classes, and engage in delinquent behaviors (Farrington, 1987). The arguments for why SS schools would promote more discipline are different for males and females (Riordan, 1990). For girls, SS schools can better promote a preferred school culture that is based on order and rules, whereas for boys, a level of discipline that tolerates shorter attention spans and higher energy levels may be preferable.

Cohesion and openness

SS schools promote student bonding and an atmosphere that fosters a strong sense of community.

Streitmatter (2002) found that girls appreciated single-sex classes for the sense of community and ownership they felt from having their own classes. She describes these classes as safe havens from intrusion by males and places that girls could control and call their own. She

did not find the same motive to be operating in boys' classes. It is not clear what desired outcomes might be associated with this phenomenon other than student satisfaction. Perhaps actual benefits in terms of stronger and more resilient social and business networks for SS graduates could be hypothesized. Conversely, Kenway and Willis (1986) are critical of the sisterhood fostered in SS girls' schools, claiming that it is based on elitism compared with other schools, intra- and inter-school rivalry and competition, and avoidance of having to cope with boys. From their perspective, the sense of sisterhood is won at the price of capitulation to and retreat from the male-dominated world.

Similarly, some educators argue that SS schools facilitate male bonding in both high school and college age males (McGough, 1991). Bonding has not been operationally defined, but it may include loyalty, cooperation, solidarity, identification, or other unspoken attributes. No outcomes of this male bonding have been specified, at least within this literature, and some opponents of SS may view male bonding to be inimical to their ideal society because it may promote exclusionary "old boy networks." Perhaps measures of cooperation within the workplace or maintenance of male friendships through life would be relevant outcomes that would not offend critics.

SS schooling allows youth to learn gender-specific life lessons in school.

Datnow, Hubbard, and Woody (2001) found that SS settings allowed teachers to have more candid conversations about sex- or gender-specific life lessons and could thus offer social or moral life lessons. The argument is that in a mixed setting, the students would not be comfortable opening up and participating in certain discussions because some degree of posturing takes place before members of the other sex. The teachers would also be more comfortable using classroom time on subjects that are of particular interest to only one sex if the other sex is not present. The topic areas involved (besides sexuality) and the specific outcome variables that this might affect have not been specified. Perhaps an awareness of safe-sex information or physical health and hygiene and behavior on related outcomes such as pregnancy, HIV, and other sexually transmitted diseases would be potential outcomes. This argument would be expected to be more salient in high school and middle school than in elementary school, but it could have implications there as well. Datnow, Hubbard, & Woody (2001) also note that these discussions occurred only when committed, talented, and savvy teachers were present; other teachers were uncomfortable providing social or moral guidance. Thus, this explanatory variable cannot be assumed to be operating equally in all SS settings.

SS students are more comfortable deviating from norms and expressing within-sex differences.

Woody's (2002) qualitative research suggests that boys in SS schools are less likely to see themselves as a unified, monolithic entity compared with girls and are more able to express and appreciate intra-sex differences. This appreciation could actually lead to greater tolerance of various degrees or versions of masculinity. This greater openness to expressing differences is

claimed to occur in part because of a lesser need to impress girls through one's behavioral patterns. Desired outcomes achieved by this rationale have not been enumerated; perhaps tolerance of intra-sex differences permits more involvement in not traditionally male academic and extracurricular activity. However, it is unclear whether that is a desired outcome or merely another explanatory variable for other significant desired outcomes. Among disadvantaged youth, desired outcomes could be the enhanced ability to withstand pressures to downplay academics, indulge in early sexual experimentation, or act violently.

SS capitalizes on known preferences for within-sex associations.

Numerous studies show that in both school and the workplace, 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). Maccoby (1990) stresses that the lack of male-female individual differences on standardized tests is misleading because it is sometimes only in a social environment that male-female differences emerge. Her work suggests that women may find leading other women to be more natural, such that being in an SS school may provide better as well as more leadership opportunities. The practical implications of this argument are not clear. It is possible that this claimed discomfort at interacting regularly with the opposite sex leads to other mediating variables, such as being distracted by the other sex, not feeling comfortable opening up or speaking up in the presence of the opposite sex, and making more circumscribed curricular and extracurricular choices to not be in situations dominated by the other sex.

Greater opportunity beyond stereotypical roles

SS schools provide more opportunity to be in leadership roles.

This assertion (Riordan, 1994), which appears to be somewhat more relevant for females, emanates from the following premises. In CE schools, males are more apt to take on leadership roles in school-related organizations, thus depriving females of the experience of leadership (Campbell & Sanders, 2002). This has important implications for the future because a basic tenet of applied psychology is that previous behavior is the best predictor of future behavior (Mael, 1991; Mael & Hirsch, 1993; Owens, 1976). More opportunities to lead, even if accomplished by artificially removing the competition (boys), would allow more girls to experience leadership, to be better positioned for leadership roles even in subsequent mixed school and work environments, and to be more experienced and capable when called on to play leadership roles. Thus, academic grades or standardized test scores should not be the criteria by which to measure this assertion. Better options would be the amount of leadership experience in (a) college, (b) the workplace, and (c) nonwork organizations, as well as (d) *performance* at leadership roles in each of these environments. The desired comparison for the last criterion would be a matched sample of CE and SS graduates in leadership roles evaluated along dimensions presumably affected by leadership experience. Another useful issue would be whether the benefits of such experience

express themselves more clearly in subsequent leadership of women's groups, or whether it extends to leadership of mixed groups as well. The countervailing hypothesis would be that females in CE schools would have more experience leading and managing males and mixed groups, even if they had less total experience.

The view that SS schools translate to more leadership opportunities also assumes that if a public CE school were split into two SS schools, the number of extracurricular groups and leadership opportunities would be held constant in each, thereby doubling the opportunities (Riordan, 1994). This is an empirical question because the fewer resources in each school and the more homogeneous student bodies may result in some reduction of opportunities at each school.

SS schools provide more opportunity to take nonstereotypical courses and curricula.

This assertion presumes that because of the aforementioned differences in culture and the ability to have better same-sex peer and adult role models, more girls will take an interest in so-called male courses such as science, mathematics, and technology. Thus, it is more of an outcome variable than its own mediating variable. Others have argued that in order to fill classes, girls in SS classes would be actively placed in nonstereotypical classes and will therefore be more likely to be exposed to those options than their counterparts in CE schools. However, Campbell and Sanders (2002) argue that there has been no indication of increased long-term interest in science and technology among females, despite efforts to change attitudes. In their view, having SS schools for this purpose would be a waste of resources.

Salomone (2002) also mentions the possibility that boys will take advantage of a wider range of courses, such as foreign languages and the arts. To the extent that this phenomenon is empirically true, the reason may be that, as mentioned above, SS schools allow boys to express within-sex differences more comfortably. Therefore, they would be more willing to take those courses that would be attended primarily by girls in a CE school.

SS schools provide more opportunity to engage in nonstereotypical extracurricular roles.

Salomone (2002) mentions the ability of SS schools to provide opportunities to experience a broad range of extracurricular activities, such as music and poetry for boys and computers and technology for girls. The assumed process is that by separating boys and girls, certain activities are no longer characterized as male or female. Therefore, the individual who wishes to try the stereotypical "other" activity is not mocked (or worse) for being less manly, less womanly, or any other popular slur in schools.

What are the expected and desired outcomes of such phenomena? For some, simply giving individuals the opportunities to express themselves and find their own niche in life is a desired outcome. Others may argue that by opening up all endeavors to youth without stigma, highly capable youth will not be herded away from areas in which they could succeed and excel.

Or, others may argue that the goal is to move toward a more gender-neutral society in which both genders are equally interested in all endeavors. In any event, the criteria of interest are unclear. Are they the percentages of students participating in "cross-gender" activities? Are they the percentages continuing on beyond schooling in that type of endeavor? Earlier it was mentioned that despite much effort, it has not been possible to greatly increase female interest in science and technology as a group. Perhaps society-wide gender-neutral interests are not an appropriate expectation or criterion for this argument.

Safety and moral enhancement

SS schools provide safety from harassment and sexually predatory behavior.

Research indicates that females are more frequently the targets of sexual harassment than males are (Bailey, 1993; Stein, 1986). Obviously, SS schooling reduces opportunities for such harassment. Further, even within CE institutions, departments with more women in positions of authority and prestige have less sexual harassment (Bond, Mulvey, & Mandell, 1993; Gutek, 1985). Because girls' schools have higher rates of female instructors and administrators, even the probability of harassment by male employees of SS institutions should be reduced. As a result, some parents choose SS schools to protect their daughters (Heather, 2002; Salomone, 2002).

Ostensibly, arguments for SS that are based on a reduction of sexual harassment treat such a reduction as its own outcome and justification, irrespective of any connection to academic achievement. Reducing the daily stress from harassment and going to school in an environment free of fear of being grabbed, propositioned, or shamed are seen as valued outcomes in and of themselves. Objective outcomes such as reduced rape and unwanted pregnancy (Salomone, 2002) might be tangible evidence of reduced harassment, but a lack of evidence on either extreme event would not be sufficient to deny the value of SS schools in this regard. However, in an analysis of an American Association of University Women (AAWU)–sponsored study of sexual harassment that claimed widespread harassment of both males and females, Lee, Croninger, Linn, and Chen (1996) stated that 75% of students responded to sexual harassment through avoidance behavior such as skipping classes or school, dropping out of courses, or dropping or avoiding certain places and extracurricular activities. In addition, there were some reports of psychological problems such as disruptions in sleeping or appetite. If this is true, then it is possible that harassment could result in decrements in school performance. It could also suggest that both males and females could be pressured to avoid activities that members of the other sex viewed as their domain, thereby reinforcing stereotypes and limiting access to opportunities. All these hypotheses need to be studied more directly and carefully because the AAUW data were not focused on SS schooling as an alternative and the quality of the AAUW research has been the subject of controversy (Sommers, 1994).

Those who oppose SS schooling for this purpose could argue that sexual harassment can be a problem throughout adulthood and young women need to learn the various coping strategies available to the harassed (cf. Eder, 1997). Further, Campbell and Sanders (2002) assert that by

separating males and females, one accepts beliefs that boys are strong and girls are weak, that boys are naturally incorrigible, and that the only acceptable response for girls is to leave rather than fight back. They prefer that schools remain mixed so that young people are trained to refrain from harassment (cf., Katz, 2000). Their view has an explicit hierarchy of values. Retraining youth to be different is a higher priority than the short-term and possibly long-term gain that individuals would receive from being separated during those years. It would not be possible to present any empirical outcome data regarding safety or academics that would be able to refute this argument. One exception might be a study of the successful retraining of boys not to harass girls in a CE system and a demonstrated ability to export that training to all socioeconomic groups.

SS advocates would argue that by the time females reach post-secondary schooling or the workplace, males and females have matured to the extent that sexual harassment is somewhat less prevalent and less tolerated by management. Conversely, some may feel that even if sexual harassment were as prevalent in later life, middle school and high school students should be protected during their youth from harassment (Streitmatter, 1999). Therefore, the argument would be that even though females will eventually have to work or study with males, it is still worthwhile to protect them during middle and high school. The sexual harassment argument is also one in which "dual academies" with separate classes for males and females clearly part company with completely SS schools as solutions. Even in dual academies, there is more harassment during nonclass times than in SS schools (Datnow, Hubbard, & Woody, 2001).

SS schools lower sexual distraction for males and females.

Exposing adolescent males to female peers on a regular basis increases sexual tensions that many youth lack the maturity to control (Hawley, 1993). Streitmatter's (2002) qualitative study of 10 SS classrooms found that both males and females reported less distraction in the SS classroom environment. This enabled them to better focus on and accomplish their work, albeit for different reasons. Males cited reduced sexual distraction, whereas females mentioned relief from distractions such as being interrupted and embarrassed by male classmates and having the class dominated by males. The assumptions that underlie the effects of the distraction hypothesis for males were described earlier in the example preceding this section.

Direct links between male or female distraction by the other sex and academic outcome measures have not been shown in the SS-CE literature. Another possible outcome mentioned by Salomone (2002) is that girls fear being called "fat" by boys and may have heightened vulnerability to not eating, with all its ramifications for eating disorders. Little research has been done on the relationship between type of school and eating disorders (Mensinger, 2001), seemingly none with public schools, and the hypothesized processes need to be enunciated and tested.

Assuming that distraction does exist, some gains might be achieved in SS classrooms or dual academies, and completely SS schools would not be required. However, to the extent that

distraction is not limited to encounters of that moment and is a carryover from nonclassroom contact, SS schooling would lower the total opportunity for distraction over the course of the school experience. This is a testable hypothesis. However, Janet Gallagher of the American Civil Liberties Union's Women's Rights Project has termed the view that boys and girls distract each other an "enormously dangerous presumption" (Salomone, 2002). How a description of observed reality can be dangerous is puzzling.

SS schooling aids moral enhancement.

Some religious groups, including some Catholics (De Grandpre, 1970), Muslims (Datnow, Hubbard, & Woody, 2001; Haw, 1994; Shaikh & Kelly, 1989), and Orthodox Jews (Feinstein, 1959; Fisher, in Riordan, 1990) strongly prefer SS schooling, believing that the spiritual and moral enhancement of an SS environment override virtually all other considerations. While this may seem irrelevant for a consideration of SS public schooling, it may actually be relevant. Many parents, both religious and nonreligious, may want a school environment with reduced social pressures to experiment sexually earlier than the parents view as wise or moral. Achieving an outcome of reduced sexual activity (separate from unwanted pregnancy, rates of STDs, or rates of HIV) would be a legitimate outcome measure of the value of SS schooling *for those parents*. It is unlikely that any parents would insist that the public school experience specifically *add* to media and peer pressure to be sexually active. Other moral issues that may be affected positively by secular SS public schooling have not been specified.

PROPOSED EXPLANATORY VARIABLES AGAINST SS SCHOOLING

Life coping skills

SS schools do not prepare students for mainstreaming into the mixed-sex workplace and society.

Because CE schools reflect real-world social and workplace interactions, they are claimed to better prepare youth for cross-gender interactions and integration into society (Dale, 1971, 1974; West & Hunter, 1993). This reflects a common assumption in some circles that graduates of SS high schools, if not middle or elementary schools, are somehow less adept at interactions in either the mixed-gender workplace or other activities, perhaps even in the interpersonal aspects of intimate relationships. Hawley (1991) disputes this claim, stating that "boys from boys' schools have not as a body registered special difficulties in adapting to the coeducational conditions of university life." Both Hawley (1991) and Gilder (1973) claim that anthropologically, boys and girls have been educated separately across most cultures in most time periods.

The operationalization of this assumption that CE students cope better in the mixed-sex workplace has not been forthcoming, nor has the evidence to support it. Thus, it remains an

important, but understudied claim. As with many other claims for and against SS schooling, it is a significant issue irrelevant of whether either type of school is associated with higher scores on academic achievement tests.

Behavioral problems

SS schooling fails to socialize and discipline rowdy males.

It has been claimed that having boys and girls in the same classrooms better socializes boys by curtailing their rowdy and rough behavior (Jones & Thompson, 1981; Sadker & Sadker, 1994). This argument has implications for boys and girls. Regarding curbing boys' behavior, it is possible that CE would control boys' behavior in the short term and make teaching them easier. However, subjecting boys to female-normed expectations of compliance may be ultimately counterproductive and have long-term negative effects for boys (Sexton, 1969). SS advocates argue that SS schools are better for boys precisely because the schools can be run more loosely and with sensitivity to boys' naturally greater activity level and aggressiveness. Others argue that only in SS schools can disadvantaged boys be exposed to a tougher form of discipline. However, this reverts to the bitter debate about whether intrinsic differences between boys and girls exist and can be acknowledged (Salomone, 2002).

Some CE advocates claim that it is bad for girls to have their more aggressive male peers removed from their midst, thereby depriving them of learning how to compete with them. Advocates of SS for girls claim that removing boisterous boys allows girls to learn more in school and that separation should be judged primarily by what it does for academics or safety, not for the development of competitive coping skills. However, Campbell and Sanders (2002) view such a stance as essentially a capitulation to male bullying. Instead, they advocate having schools remain CE and making more aggressive boys accountable to shared behavioral norms, a view contrary to that of Sexton (1969). Thus, the issue revolves around more complex goals than simply observing whether boys are better or worse behaved in CE or SS schools.

SS male schools have more peer harassment.

A study by Parker and Rennie (1996) showed that although girls in SS schools received the least harassment, boys in male SS schools received the most, more than students in CE schools. The rationale may be that girls socialize boys and tame their tendencies to harass other boys or boys curtail their harassment of each other in the presence of females. This view is not borne out by the qualitative work of Eder (1997), which demonstrates fierce cross-sex and same-sex harassment in a CE school. It is also unclear what positive outcomes are being predicted by keeping boys and girls together other than protecting some boys instead of protecting girls from cross-sex harassment. Using Campbell and Sanders' own logic, if SS schooling were shown to have other advantages, less aggressive boys should not be protected through the mechanism of CE schooling. Instead, both they and their harassers should be learning better coping skills in the tougher, all-male SS environment. Thus, the finding of more same-sex harassment in SS schools

needs a better rationale, evidence of relationships to significant outcomes, and a justification for why it would take priority over the cross-sex harassment in CE schools.

Reinforcement of sexism

CE schools reduce sexual stereotypes through familiarity.

This argument stems from the so-called contact theory that has driven much work in the area of racial segregation. The theory states that simple contact on a regular basis will reduce outgroup stereotyping. However, Riordan wrote (1990) that after over 30 years of research on reducing racial stereotyping through contact, the theory remains largely unsupported. Even if the theory had been supported with regard to race, there would be a crucial difference. Few postulate that youth by nature and from earliest ages tend to congregate with their own race. By contrast, numerous studies show that from early ages, and in school and the workplace, members of both sexes at all ages prefer within-sex associations (Maccoby, 1990). The idea that CE can force children and youth to perceive each other as not differentiated by sex and gender is highly questionable. Lockheed and Klein's (1985) review of studies underscores that even in CE schools, students predominantly sex-segregate themselves in their interactions. Lockheed has called sex-segregation in CE schools remarkably stable (as cited in Riordan, 1990). If so, this critique possibly sacrifices other potential gains for an outcome with an unclear objective and a dubious means for achieving it.

SS schools reinforce traditional stereotypes.

The claim that SS schooling for both boys and girls reinforces traditional stereotypes that are presumed to be false and destructive has been made by a number of authors (Brutsaert & Bracke, 1994; Foon, 1988; Kaminer, 1998). As noted above, this is a value-based criticism, in the same way that some advocates favor SS schools precisely because they reinforce what to them are natural male-female differences. It is unclear that any positive or negative objective criterion evidence would override the positions of either side on this issue. The argument that SS reinforces stereotypes also assumes that this problem is an inherent feature of SS schools without explaining why. The work of Lee and colleagues seems to say that what she terms sexist attitudes can be found in any type of school (Lee, 1997; Lee, Marks, & Byrd, 1994).

Heather (2002) believes that parents who chose SS schooling in her study were wary of their daughters' embracing feminism. Although these parents wanted their daughters to learn fortitude and not be cowed by boys, they also wanted them to adopt certain traditional views about women's roles. Woody (2002) makes a different point, that girls in SS schools tend to make generalizations about boys, even though they are able to make more nuanced distinctions between individual boys. This is not surprising, given that the heightened sense of community and cohesion that girls find appealing in SS schools will lead to some disdain for the outgroup (boys). The question is whether such attitudes translate to sexist prejudice later in life, or whether other factors might contribute more to anti-male attitudes throughout adulthood. Again,

retrospective studies of differences between SS and CE graduates regarding workplace or social attitudes or prejudices about the other sex would be informative.

By contrast, with the exception of Datnow, Hubbard, & Woody, (2001), little attention has been given to what the parents of boys attending SS schools want for their sons. Although private all-male schools have been depicted as bastions of male privilege, no one has suggested that parents choose SS public schools, especially those for disadvantaged youth, to inculcate sexist beliefs. A lack of interest in understanding the motivations and aspirations of parents of disadvantaged students, especially males, has left a gaping hole in previous research.

SS schools do not succeed in changing boys' sexist attitudes.

Kenway and Willis (1986) make the argument 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). Lee et al. (1994) found 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 even some former SS advocates to question whether CE versus SS schooling is still the issue, given that neither form of schooling is inherently immune to sexism and that specific efforts to remedy sexism must be undertaken in all schools (Lee, 1993, 1997). However, removing sexist attitudes from youth is one social goal, but probably not a primary goal of many parents or students. Being safe from harm, staying in school, and getting a functional education are probably higher priorities. Were SS schools to be shown to have other academic or social advantages, it would behoove critics to show why failing to eradicate sexism would override all other benefits.

SS schooling reinforces traditional and stereotypical gender roles.

Some people see SS schools as places that reinforce roles and expectations that are outmoded and backward thinking. However, others deem these same roles and expectations as traditional and appropriate for men and women (Hyde, 1971). Whether this is a benefit or a drawback of SS schooling depends on one's perspective. Advocates of SS schools argue that CE schools (a) homogenize experience, depriving students of gender-specific lessons; (b) fail to address the roles of one gender because the school is dominated by the other; or (c) actively sow gender confusion in youth seeking to learn how to play their appropriate societal roles (Kolesnik, 1969). The irony is that detractors of SS schools would say that that is precisely why they oppose SS schools – SS schools reinforce traditional roles for both males and females (Campbell & Sanders, 2002). Given that this dispute goes to the heart of what different groups believe an ideal society would be, the question is whether any outcomes seen as beneficial to students, to their parents, or to various segments of society could inform the issue. For example, perhaps one might propose embracing gender-appropriate roles (e.g., marital or parenting success, work stability) as a mutually acceptable criterion. Others might argue that any assumption of something called gender-appropriate roles is illegitimate, thereby tainting all such criteria.

Separating girls so that they can do more "male" activities and courses is a capitulation to male sexist values.

Some feminists see separating girls from boys to provide them with more opportunities for stereotypical male-dominated roles as a capitulation to dominant male values such as competitiveness and individualism. They prefer that schools instead attempt to improve male-female equity in either school or the subsequent workplace (Heather, 2002; Kenway & Willis, 1986; Marshall, 1997). This is essentially a debate within feminism (Salomone, 2002). Some argue that the movement's primary goals should be to make women more competitive in order to garner more of the power and resources in society. Others oppose this goal, instead arguing that women must develop their own modes of culture and society different from those dominated by male values of aggressiveness and competition. The goals and objectives of individual students and their parents do not figure prominently in this debate.

SS schools let the CE schools resist change from sexism by using SS as an alternative for some students.

Campbell and Sanders (2002) have argued that SS schools are an alternative for parents of girls who would otherwise stay within the CE system and fight for equity concerns for their daughters. Heather (2002) and Watson (1997) have expressed similar views. This argument against SS schools does not claim that they are inferior on any dimension. Rather, it argues that for the sake of society, those who could go to predominantly private, nonneighborhood SS schools should not do so. An analogous argument would be to tell parents who wish to send their children to any type of private school for any reason that they should forgo that benefit in order to save the public schools. As such, it is not an explanatory argument but a public policy position. It argues that students who may gain from SS schooling should suffer possible harm, perhaps throughout their whole school careers, in order to keep in the CE schools those parents who find these public schools so intolerable that they will demand change. The assumption that intolerable conditions in schools lead to change and improvement is debatable. In addition, this argument may have had more merit when it was legally problematic to have public SS schools in the United States. With changes to Title IX, the argument is now somewhat circular. If SS schooling were allowed to proliferate in the public sector, there would be no need for social pressure to "save" CE schools. Rather, SS schools would be allowed to compete for and service all public school students who might benefit from them.

Exclusive relationships

SS schools lead to male (or female) bonding that can be construed as developing exclusionary (and even discriminatory) networks and cliques.

Many have argued that SS schools lead to strong relationships among the students (see earlier sections on male bonding and female sisterhood). However, others have argued that these same strong bonds are also *negative* aspects of SS schools – but these are not mutually exclusive

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arguments. Rather, having strong bonds with members of the same sex tends to create exclusionary clubs that can be a problem if they exclude disadvantaged groups of people. A few outcomes have theoretical relationships with this explanatory variable. The initial outcome would be the strength of relationships between classmates, and a later outcome would be the strength of these relationships after school graduation. Hypotheses would also predict a relationship with career success because these bonds can become good business connections (in the right circles). It is precisely these arguments that led to the move to disallow the SS status of colleges like the Virginia Military Institute (VMI) and the Citadel. Both were viewed as stepping-stones to the inner circles of business and political power in their respective states – circles that excluded women (Salomone, 2003). It is interesting that a number of critics of these schools and their "old boy networks" did not see a contradiction between their position and their support of the continuation of SS women's colleges, with their concomitant opportunities for networking. Conversely, other advocates of SS schooling for women came to the defense of the all-male academies and schools (Fox-Genovese, 1994; Riesman, 1991).

This argument assumes that these strong relationships do not occur in CE schools – even though most friendships at school occur with members of one's own sex (Maccoby, 1990). In addition, the argument assumes that the exclusionary benefits accrued to alumni and alumnae of SS schools would occur in all types of these schools – even in SS public schools that have students from all racial backgrounds and socioeconomic strata. That a student graduating from a school with a long-standing network of graduates will benefit from those connections, be it VMI, Harvard University, or Smith College, seems reasonable. The idea that a new public sector SS school with no alumni or alumnae placed in strategic communal roles will also lead to such advantages needs to be questioned. In addition, although some advocacy groups identify all SS schools as sources of potentially harmful exclusionary networks that could harm the career advancement of women, the tangible and intangible benefits that the students derive from bonding may be great. Clearly, different stakeholders may differ on whether there are socio-emotional benefits for the students in addition to networking benefits and whether these are sufficient to withhold blanket condemnation of all SS schools. Research on this topic would have to study these issues in SS schools with less entrenched networks and more diverse student bodies.

Financial considerations

Female-only schools have fewer resources than male-only and CE schools, hence poorer schooling.

Some 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). However, Riordan argues 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" (1990, p. xi). In other words, there is no reason to believe

that the disparity explains any failing of girls' SS schools on any known outcome. In addition, it is unclear whether the disparity in funds in private schools is a function of the interests of the parent bodies, the sponsoring organizations, or some other factor. However, if SS schools were to proliferate in the public sector, it would be difficult and legally problematic to justify and maintain disparities in funding for parallel boys' and girls' schools.

It is expensive and wasteful to have parallel programs for males and females.

The primary reason that the majority of schools in the United States became CE was because of economic considerations (Riordan, 1990), and many schools' conversions to CE were driven by financial crises rather than by educational philosophy (Bednall, 1993; Kolesnik, 1969; Woody, 1974). It is possible that financial considerations would still make schools or school districts hesitate to split CE schools into separate schools. On the surface, this argument says nothing about the impact on outcomes for students and as such is not an explanatory variable. However, one related argument is that because of limited funds, SS school students would be likely to have less opportunity to participate in various extracurricular activities in school. If the case could be made that going to a smaller or poorer school or one that has fewer clubs or playing fields results in poorer long-term outcomes, this might be a concern. However, Lee (1997) has already shown that smaller schools tend to have greater success. Unless her analysis was limited to affluent private schools, it suggests, as does that of Riordan (1990), that fewer resources are not correlated with poorer education. Perhaps the concern is that with fewer resources, SS schools will support only traditional gender-appropriate extracurricular activities and deny students access to nontraditional activities. That does not seem to have been the case at SS schools; if anything, SS schools have tended to offer more nontraditional options (Salomone, 2003).

In addition, some have also suggested that it may be fiscally difficult to have parallel special education classes in two SS schools. If SS schools do not have special classes for students with various types of learning disabilities, those students needing special education may be mainstreamed against their best interests. However, this would become an issue only in a locale with no CE educational options and insufficient funding for the SS schools. In addition, it is interesting to note that a large majority of special education students are male (Pollack, 1999), so many of these classes are virtually SS – even in CE schools.

DISCUSSION

In the previous sections, we introduced a number of possible explanations for and against SS schooling and subjected them to critical analysis. Virtually all of them have unanswered questions about their precise meaning, whether they are in fact mediators, the basis for their assumptions, or their eventual outcomes. It would be premature to state categorically that some are better or more promising than others, and we encourage additional research on most of them.

However, we believe it is worthwhile to provide some criteria for which ones are most worthy of further research efforts. These are some of the possible criteria.

Intrinsic versus possible / typical. Some arguments for SS schooling are inherently true, such as less opportunity for cross-sex harassment, or are true *if the explanation matters*, such as the argument that SS schools have less cross-sex distraction. Others may be typical of SS schools, such as more same-sex teachers or more leadership opportunities, but do not necessarily occur. For example, it may be true that SS schools typically reinforce sexual stereotypes (an opposing argument), but it does not have to be that way.

The only solution versus a solution. Some arguments state that SS schooling is the only way to achieve a gain or reduce a problem. For instance, arguments based on differences in maturation or discipline needs or the ability to discuss gender-specific topics would require the separation of sexes (although separate classes could be sufficient). Other arguments, such as adult role models, leadership opportunities, and nonstereotypical choices of coursework, argue only that SS schooling will make these opportunities more likely or feasible.

Proactive versus defensive. Some arguments present SS schools as safe havens from negative aspects of CE schools, such as pressure on girls to downplay their intelligence, freedom from harassment, or freedom from distraction. By contrast, others see SS schooling as providing value-added benefits, such as an increased sense of community or pedagogy customized to learning styles and maturation.

Stand-alone versus dependent. Some explanations are seen as viable for any SS school, such as reduced distraction, pro-academic subculture, or reduced sexual distraction. Others have typically proposed separation by sex as one component in a larger program. For instance, the claimed benefits for minority males are linked to a program that is sex-specific as well as race-separate and has a specific educational stance stressing personal responsibility. As such, the SS component may be essential, but it is dependent on other favorable conditions.

Important versus less important outcomes. Some explanatory variables purport to predict life-changing criteria, such as graduation rates or unwanted pregnancy. Others, such as ones that predict participation in nonstereotypical activities, *may* be related to important outcomes but have yet to be shown to do so.

Benefiting students versus benefiting others. Most of the pro-SS and anti-SS explanations posit benefits or problems for the students attending the schools. However, some arguments against SS schooling may even grant that the attending students will benefit but argue that society will be harmed. For instance, some arguments maintain that students will form exclusive networks in society or that successful SS schooling will hamper efforts to improve public CE schooling

Benefiting some or all students. Some arguments are applicable to both males and females of all ages, such as teaching gender-specific life lessons and capitalizing on preferences for within-sex associations. Others are much more salient for males, such as maturation and discipline arguments, or for females, such as harassment and leadership arguments. Some, such as maturation issues, are more salient for those in elementary school, whereas distraction, bonding, academic subculture, and nontraditional courses and activities are more salient in middle school and high school. It would be misleading to simply tally up all possible arguments and use them to promote (or dispute) SS schooling for both sexes and all age and ethnic groups.

The synergy of explanatory variables. It is important to note that the explanatory variables do not operate in a vacuum because multiple variables may be working simultaneously. In fact, a combination of such factors may be necessary for the success of SS schools. For example, an academic subculture may be a necessary condition for positive role models to be emulated. Similarly, a lack of distraction may be a necessary precursor for a consideration of nonstereotypical coursework or extracurricular activities. Thus, although we have evaluated each explanatory variable on its own merits, we recognize that in reality, some may have direct effects on outcomes and others may set the stage for the primary mediators to operate. It remains for future research to determine the relative importance and interdependence of these explanatory variables.

In addition, we should note that this review leads to the observation that some issues may not be resolved by any type of research, even randomized experiments, because they involve issues of philosophy and relative priorities of desired or conflicting outcomes. In the world of medicine, researchers may share a common belief that preventing death is more important than any undesirable side effects. By contrast, seemingly no benefits associated with SS schools would override the objections of philosophically motivated opponents. Even for those open to considering SS schooling as an option, there is no clear-cut way to resolve the relative importance of different positive and negative outcomes. Moreover, there is no way to resolve whether an outcome that is important to one stakeholder group, such as parents, students, civil libertarians, and feminists on both sides of the issue, should be accorded more weight than an outcome valued by another group. What would be useful would be to separate fact and evidence from fiction by converting as many claims as possible to testable hypotheses and performing the necessary research.

For those who are open to using research to determine which type of schooling is more efficacious, or at least determining whether SS schooling is no less effective, many of the important arguments have not been tested. Neither have a number of criteria and desired outcomes expected to result from these explanatory processes been examined. Even those criteria that have received greater attention have not been tied to specific hypotheses or explanatory mechanisms. This paper has tried to highlight some of the testable questions that would link hypotheses, mediating processes, and outcomes. Much more work and explication are needed. In the next section, we describe the types of studies that may help fill in these blanks.

TYPES OF FUTURE RESEARCH STUDIES

Randomized experiments

Many studies regarding the relative superiority of each type of school for academic achievement have been marred by insufficient control for pre-existing or covarying differences between the CE and SS schools being compared. For example, studies involving comparisons between Catholic SS schools and Catholic CE schools, not to mention Catholic and secular public schools, have not always controlled for differences in student aptitude, parental socioeconomic status, quality of teaching, and other potential individual and structural differences. In addition, causality is also difficult to infer even in a properly controlled cross-sectional study. To counter these arguments, an optimal study would assign evenly matched students to SS and CE schools with similar resources and staffs, thereby controlling for almost all extraneous factors. Were significant differences in academic achievement to occur, it might be possible to resolve the question of SS's efficacy for that particular outcome. Such a study could possibly address some of the explanatory variables associated with academics, such as less distraction and a pro-academic subculture. Other, more daunting problems with this approach are practical. It may not be feasible to assign students to either condition against their will or the will of the parents. If they are allowed to choose which school to go to, many of the benefits of the experiment will be compromised. In addition, the cost and social engineering required to set up two evenly matched schools in a community would be daunting.

Given the practical constraints of using randomized experiments in real school settings, it may be useful to consider randomized experiments in quasi-school settings. In addition to school classrooms, children learn in other places, which may be more practical situations for randomly assigning children to SS or CE environments. For instance, summer schools and other types of training programs (e.g., computer training) are very similar to normal schools in some ways because students get together and learn in a classroom setting for an extended period of time. Even though these situations typically do not last as long as the school year, such situations would allow multiple outcomes to be considered, especially student learning. Although such a study would not take place in school, it could share enough similarities so that it would add meaningful knowledge to the discussion of SS schools.

Retrospective workplace studies

A number of explanatory variables are associated with criteria that should manifest themselves in the workplace, either soon after school or many years later. These criteria include leadership ability, ability to lead cross-gender, ability to work comfortably with the other sex, willingness of women to appear bright, and entry into nonstereotypical occupations. Educational researchers have not studied these issues, nor have organizational researchers studied the effects of SS schooling at the secondary or elementary level on later job performance or other outcomes.

One exception may be the series of studies by Tidball and her colleagues supporting 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; Tidball & Kistiakowsky, 1976). More recent replication and extension by Rice and Hemmings (1988) show 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) dispute the Tidball studies on the basis of 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. So far, the study of the eventual career performance of SS graduates has been limited primarily to college-level SS programs and has been limited to criteria (advancement) that could be most affected by socioeconomic privilege. Other work-related indicators, such as actual job performance, interactions with colleagues and subordinates, and leadership behavior, have not been addressed.

The currently proposed studies would differ from previous research in that they would (a) focus on graduates of SS elementary and secondary schools rather than colleges, (b) use work and leadership competency criteria rather than gross advancement criteria to directly address the explanatory variables, and (c) match students on relevant control variables. One possibility would be to match students from SS and CE schools who attend the same CE college and study their work behavior and the effects of their SS schooling. The studies could use ratings from supervisors and coworkers to measure work behavior, which would eliminate the problem of same-source bias in the research.

Retrospective marital and socio-emotional studies

Some of the explanatory variables reviewed above make the explicit or implicit claim that either SS or CE schooling is more likely to prepare young men and women for healthier and more stable intimate relationships, including marriage. In the same way that retrospective workplace studies could resolve relevant hypotheses, retrospective surveys regarding relationship and marriage stability and the quality and stability of cross-sexual relationships could help resolve many of these questions. At the same time, studies investigating the preponderance of STDs, eating disorders, and other socio-emotional issues encountered throughout the life cycle should be undertaken. Both objective and subjective criteria could be used. For both workplace and marital studies, results of studies comparing private SS and CE schools may be more applicable to the public school population than previous academic-related studies have been.

Longitudinal studies

Another way of resolving questions pertaining to workplace and marital functioning is to design longitudinal studies tracking students from elementary or high school throughout college and into the workplace and adult relationships, using samples of individuals matched on relevant control variables. The main advantage of this design is the ability to show change over time. However, such studies have clear disadvantages, including expense, systematic and unsystematic attrition, and the inability to resolve pressing social questions in a timely fashion.

Laboratory studies

Some of the claimed advantages of SS schools are descriptions of basic functioning, such as the claim that boys are more distracted in the presence of girls and that teachers are more comfortable discussing certain topics in single-sex environments. Verifying that these phenomena are true to a significant degree can be studied in very controlled, randomized laboratory studies.

CONCLUSION

Some historical perspective on the evolution of concerns surrounding SS and CE schooling is in order. Modern-day research on the topic resulted from the seminal work of Coleman, who claimed that SS was needed as a counterpoint to the "rating and dating" atmosphere in CE schools. This led to an extended period of research in which the primary question was whether SS or CE students achieved more academically. This was highlighted by the work of Lee, Bryk, Marsh, Riordan, and others in the 1980s and early 1990s. The findings regarding academic achievement for middle-class students have been inconclusive or somewhat favorable of SS schooling. The current state of research suggests that additional studies are unlikely to show SS schooling to be so much poorer that it should be banned as an alternative choice for parents. Conversely, studies with academic score criteria are unlikely to show SS schooling to be so superior that it can overcome all the societal-level concerns of opponents.

It is only in more recent years that a focus of this debate has shifted to disadvantaged youth. For disadvantaged youth, a wider set of criteria involving completion of school, responsible adulthood, and safety from drugs and pregnancy are potentially even more salient than gradations of improved test scores. These criteria need to be carefully tested, concurrently and beyond, and tied to specific claims for SS schools. A new program of research focused on these issues could break the gridlock of previous studies and determine whether SS schooling is indeed so promising that it cannot be denied to those who may need it most.

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