

UNIVERSITY STUDENTS FROM SINGLE-SEX AND COEDUCATIONAL HIGH SCHOOLS: DIFFERENCES IN MAJORS AND ATTITUDES AT A CATHOLIC UNIVERSITY

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We conducted an archival study at a coeducational Catholic university to test the proposition that single-sex secondary education predicts lasting differences in college majors. Men from single-sex schools were more likely to both declare and graduate in gender-neutral majors than those from coeducational schools. Women from single-sex schools were more likely to declare gender-neutral majors, but were not different from their coeducated peers at graduation. A second study was conducted with a sample of first-year students to examine the correspondence between egalitarian attitudes, single-sex secondary education, and major choice. Egalitarianism was higher in students in nontraditional majors, but did not correspond in expected ways with single-sex education. Men from single-sex schools were less likely to hold egalitarian attitudes about gender roles, whereas women from single-sex and coeducational high schools did not differ in egalitarianism. Taken together, our results raise questions about the potential of single-sex high schools to reduce gender-stratification in professions.

Women have enrolled in universities in higher numbers than men since the early 1980s (Jacobs, 1995), a trend that has contributed to the current “what about boys?” debate (Jackson, 2002) in educational circles in the United States and the United Kingdom. Discussion about overall rates of enrollment has overshadowed the fact that marked gender stratification persists in many fields of study and professional pursuits. Despite their success in accessing the educational system, women remain underrepresented in mathematics, engineering, computers, and some sciences and overrepresented in education and helping professions compared to men. These discrepancies correspond with substantial economic disadvantages for women in the job market (see Jacobs, 1995).

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Gender socialization is implicated in the process of segregation of academic and career interests. That there is differential socialization of girls and boys in our society is not in question. Research in social and educational psychology has demonstrated that teachers (see Koehler, 1990 and Mael, 1998 for reviews), parents (e.g., Eccles, Jacobs, & Harold, 1990; Simmons & Blyth, 1987), peers (see McGrath, Keita, Strickland, & Russo, 1990), and the children themselves (see Galambos, 2004) hold attitudes and exhibit behaviors consistent with different academic and career expectations for girls and boys. A role for socialization is further supported by developmental research on the timing and precursors of relevant academic abilities and interests. Girls’ loss of interest in mathematics begins in earnest around the time of high school entry (American Association of University Women, 1998) in the midst of adolescent gender intensification. The loss of interest happens despite lack of any corresponding differences in biologically based precursor skills and abilities in young girls and boys, which strongly implicates social factors (Spelke, 2005; see also Galambos, 2004).

Single-sex secondary schooling is one temporary way to bypass stereotype-reinforcing social pressure from peers and teachers (e.g., Lee & Marks, 1990) and possibly to disrupt or dilute the impact of adolescent gender intensification on academic and career choices. Monaco and Gaier (1992) have proposed that single-sex secondary schooling provides adolescents with an “enriched moratorium period

with respect to vocational development” (pp. 592–593). Research indicates that this type of schooling does indeed correspond with retention in high school courses that are stereotypically nontraditional for the student’s gender. Several studies have been conducted at the high school level, and with some notable exceptions and important qualifications, they indicate advantages for young women in single-sex programs and/or classrooms over those in coeducational settings (see Shapka & Keating, 2003). These include continued enrollment in high school mathematics and sciences courses and higher career aspirations (Watson, Quatman, & Edler, 2002). Boys’ schools are not as often studied, although available research indicates boys in single-sex settings in the United Kingdom and Australia are more likely to continue to enroll in high-level literature courses than boys in coeducational settings (Lawrie & Brown, 1992).

The primary question addressed in the current study was whether university students from single-sex high schools remain less likely than those from coeducational high schools to make gender-typical academic choices after spending time in a coeducational setting. Does the vocational moratorium during adolescence correspond with lasting changes in interests, reflected in less traditional patterns of college majors at graduation? Social pressure to adhere to traditional gender roles and corresponding movement to traditional courses and interests does not end with high school graduation. Pressures continue beyond secondary school into college and the working world and help to maintain sex-based divisions in the labor force that contribute substantially to the stubborn wage gap between women and men (Hyde, 2007, p. 266; Jacobs 1995). Jacobs (1995) determined through analyses of large national samples of women and men that first-year students enter college having declared majors in sex-segregated patterns, up to half change majors before graduation, and graduation patterns are more sex-segregated than those at college entry. Others have documented that women leave mathematics, sciences, and engineering at every successive step from high school graduation through terminal degree and into the working world, maintaining gender imbalances in these fields despite equal representation of girls in many relevant high school courses (e.g., Hanson, Schaub, & Baker, 1996; Strenta, Elliott, Adair, Matier, & Scott, 1994; Widnall, 1988).

There is reason to believe that college students who attended single-sex secondary schools start college with patterns of major selection that differ from those of their coeducated peers. Two recently published studies reported that women (Thompson, 2003) and men (James & Richards, 2003) from single-sex high schools are more likely to declare gender-neutral college majors than those from coeducational high schools. Both studies presented this as evidence of lasting freedom from pressure to adhere to gender stereotypes. Both studies used samples that were either entirely or largely composed of people who attended secondary school prior to 1990, and it is not known whether or to what

extent the differences they identified are apparent in today’s students. The primary study reported here was conducted with a sample of students who attended secondary school in the late 1990s, to determine whether differences in majors are evident between students from single-sex and coeducational high schools and whether they persist after 4 years in a coeducational university.

A secondary focus of this research is egalitarian attitudes. Little is known about the psychological characteristics that correspond with single-sex schooling, and this complicates the search for possible mechanisms underlying differences in course and career interests. The most consistent differences between single-sex and coeducational secondary school students have been behavioral rather than attitudinal (see Shapka & Keating, 2003, for a review), reflected in ongoing enrollment in high school courses in nontraditional areas. Most studies have failed to find any differences in girls’ attitudes toward or perceived competence in mathematics or science. One recent, carefully designed study did find that single-sex classes increased girls’ self-reported effort in mathematics, but also found that effort and two other math perception variables were unrelated to persistence in math courses (Shapka & Keating, 2003). These counterintuitive results suggest that overt attitudes about particular subjects are not potent factors in the different course choices of students in single-sex versus coeducational programs. We reasoned that a moratorium from forces of gender stereotyped socialization might instead be reflected in differences in broader attitudes about sex-role egalitarianism.

In the first study, an archival longitudinal database from our institutional research office was used to track students’ majors from first-year through graduation to determine whether differences in enrollment in traditional majors persisted through graduation. In the second study, with a separate sample of first-year students, we examined differences in sex-role egalitarianism between students from single-sex and coeducational secondary schools who had declared traditional or nontraditional majors. We surveyed attitudes toward gender egalitarianism as they related to single-sex versus coeducational secondary education and assessed the relationship between these attitudes and the majors that students selected.

STUDY 1: NONTRADITIONAL COLLEGE MAJORS

We expected students from single-sex high schools to both enter and graduate in nontraditional majors at a higher rate than students from coeducational high schools.

Method

Participants

We secured data for 1,210 individuals who had attended a medium-sized comprehensive Jesuit university in Pennsylvania. The sample included all of the nontransfer

students who graduated in 2002 and 2003 with baccalaureate degrees and who had entered with a declared major (19% had not). Of these, 750 were women and 460 men; 958 were from coeducational, 136 from all-girls, and 116 from all-boys high schools; 627 were from public, 572 from private Catholic, and 11 from private independent high schools (these were dropped from all analyses). Most participants were White, Catholic, middle-class, and from Northeastern/Atlantic states. Approximately 95% of students who graduated during those years came from Northeastern/Atlantic states, and 92% identified themselves as White. In campus surveys, between 65% and 80% of our students identify themselves as Catholic, and approximately 90% as middle or upper middle socioeconomic class.

Important dimensions of the schools from which our students hailed were confounded (e.g., public is non-denominational and coeducational, private is overwhelmingly Catholic). This problem is most commonly controlled in studies in the United States by using homogeneous samples—typically including only students from private Catholic (e.g., Lee & Marks, 1990; LePore & Warren, 1997) or independent (e.g., James & Richards, 2003) schools. However, some researchers have also included public school students, typically by creating dummy variables and analyzing contrasts of interest (e.g., Riordan, 1985; Thompson, 2003). Our sample was relatively homogeneous and our primary interest was in variables most directly related to the presence or absence of the other gender in the school setting. Nonetheless, we tested for differences between the public and private coeducational groups on our a priori hypotheses. None were significant. For both first-year college women and women at college graduation who went to coeducational high schools, the relationships between major choice and public versus private high school were insignificant, $\chi^2(2, N = 610) = .60, p = .74$ and $\chi^2(2, N = 610) = .30, p = .86$, respectively. For first-year college men, the relationship was only marginal, $\chi^2(2, N = 339) = 5.95, p = .051$, and for men at college graduation, the relationship was not significant, $\chi^2(2, N = 339) = 3.86, p = .15$. Therefore, we focused the remaining analyses on contrasts involving the single-sex versus coeducational high school context.

Measures and Procedure

Sex, high school code, major declared at entry to the university, and major held at graduation from the university were obtained from our institutional research office. Majors were coded into nine clusters for analysis according to the academic college in which the major is located, prior categorizations in the educational literature, and need for adequate sample size for further analysis. Categories were: Business, Science, Computers/Mathematics, Social Science, Humanities, Communication, Education, Occupational/Physical Therapy, and Nursing.

Preliminary analyses were conducted to determine whether the gender-stratified patterns reported by Jacobs (1995) at enrollment and graduation were evident at our university. Pearson chi-squares were used to test the relationship between gender and major (the nine major categories) and results were significant, $\chi^2(8, N = 1199) = 147.08, p < .001$ at first-year and $\chi^2(8, N = 1199) = 188.21, p < .001$ at graduation. These results are consistent with Jacobs's reports of national patterns. Majors were then classified as traditionally female, neutral, or traditionally male. Traditionally female majors were Education, Nursing, and Occupational/Physical Therapy. Neutral majors were Social Sciences, Humanities, and Communication. Traditionally male majors were Business, Science, and Mathematics/Computers.

Results

Chi-square tests of independence were conducted separately for women and men at entry to college and at graduation to test the hypothesized relationship between high school gender composition and the type of major selected (traditionally female, neutral, or traditionally male). Post hoc pairwise chi-square tests were conducted on significant omnibus tests to elucidate the nature of the significant relationships. A Bonferroni adjustment was applied with the post hoc tests.

As first-year students, women, $\chi^2(2, N = 746) = 7.08, p < .05$, and men, $\chi^2(2, N = 453) = 7.28, p < .05$, evidenced a relationship between high school gender composition and major. Table 1 contains all percentages. Post hoc analyses indicated that women from single-sex high schools were less likely to declare majors traditional for their gender and more likely to declare majors classified as neutral than their peers from coeducational high schools, $\chi^2(1, N = 477) = 6.80, p = .009$. Pairwise comparisons of neutral and traditionally male majors, and of traditionally female and traditionally male majors, were not significant, $\chi^2(1, N = 478) = 3.03, p < .10$, and $\chi^2(1, N = 537) = .85, p < .50$, respectively.

Post hoc analyses of data from first-year men indicated that those from single-sex high schools were less likely to select traditionally male majors and more likely to select neutral majors than those from coeducational high schools, $\chi^2(1, N = 409) = 6.62, p < .05$. Pairwise comparisons of neutral and traditionally female majors and of traditionally female and traditionally male majors were not significant, $\chi^2(1, N = 167) = 2.86, p < .10$, and $\chi^2(1, N = 330) = .06, p < 1.0$, respectively.

At graduation, no relationship existed for women between the gender composition of the high school and whether they graduated from the university in a gender-traditional major, $\chi^2(2, N = 746) = 1.32, p = .52$. For men, the relationship remained significant, $\chi^2(2, N = 453) = 11.62, p = .003$. Post hoc analyses of men at graduation indicated that those from single-sex high schools were significantly more likely to graduate in neutral than traditionally

Table 1

Percentages at First Year and Graduation by Major and Type of High School Attended

	Major category		
	Traditionally female	Neutral	Traditionally male
Women			
First year			
Single sex	28.7%	36.8%	34.6%
Coed	37.5%	26.1%	36.4%
Graduation			
Single sex	41.2%	30.9%	27.9%
Coed	44.6%	26.1%	29.3%
Men			
First year			
Single sex	7.9%	36.8%	55.3%
Coed	10.3%	23.9%	65.8%
Graduation			
Single sex	6.1%	45.6%	48.2%
Coed	10.6%	28.6%	60.8%

male majors, $\chi^2(1, N = 410) = 9.40, p = .002$, compared to their peers from coeducational high schools. Men were more likely to graduate in neutral than traditionally female majors, $\chi^2(1, N = 192) = 5.44, p < .05$, and evidenced no difference between traditionally male and traditionally female majors, $\chi^2(1, N = 304) = .52, p < .50$.

In sum, students from single-sex high schools entered college less concentrated in majors traditional for their gender and more likely to have declared a gender-neutral major than those from coeducational high schools. However, by graduation, the advantage for women from single-sex high schools had disappeared. In contrast, men from single-sex high schools were significantly more likely than those from coeducational schools to hold gender-neutral majors at graduation. However, as is clear from Table 1 and the above analyses, men from single-sex high schools were not more likely than men from coeducational high schools to either enter or graduate in majors designated as traditionally female.

STUDY 2: EGALITARIAN ATTITUDES

This study was conducted to examine attitudes of first-year students that are potentially relevant to high school background and major selection. We expected women from single-sex high schools to evidence more egalitarian attitudes than those from coeducational high schools. We predicted that men from single-sex high schools would evidence less egalitarian attitudes than those from coeducational schools. This prediction was based on prior studies that have examined attitudes about women held by boys in single-sex schools (e.g., Jackson, 2002; Lee, Marks, & Byrd, 1994) and that have revealed pronounced sexism in

all-boys classes in England and in independent boys' schools in the United States. Finally, we expected women and men in nontraditional majors to evidence more egalitarian attitudes than those in majors traditional for their gender, and expected the main effect of school type in men to be modified by an interaction with major. Specifically, we expected men from single-sex schools who selected traditionally male majors to evidence particularly low egalitarianism, whereas those in nontraditional majors were not expected to differ significantly from their coeducated peers.

Method

Participants

All first-year students living on campus at a coeducational Jesuit university in Pennsylvania were invited to participate in a survey administered 6 weeks into the fall semester of 2003 in tandem with an educational residence life activity. The full survey took approximately 30 minutes to complete, and participants received credit toward the required number of residence activities. Approximately 76% (569) of residential first-year students responded; however, 8% returned surveys that were unusable, the majority due to problems on questionnaires (e.g., missing data, multiple responses to items, random response patterns). Of the remaining 505 individuals, five reported attending a mix of single-sex and coeducational schools during their high school years and were removed from the data set. Respondents were 61% women, closely approximating the gender distribution of students enrolled in the university that year. The majority of participants (85%) were 18 years of age ($M = 17.97, SD = .40$, range 16 to 19). Fifty percent had attended a public high school, 28% a private coeducational school, and 22% a private single-sex school. Students were predominantly White, middle-class, and from Northeastern/Atlantic states. In campus surveys, between 65% and 80% of our students identify themselves as Catholic. All participants from public schools reported that their schools were coeducational, and we projected based on data from our institutional research office that 96 to 99% of participants from private coeducational schools and 99% from single-sex schools had attended Catholic schools.

Measures and Procedure

Participants provided demographic information including sex, major, and type of high school attended. Majors were written by participants onto a blank section of the demographic sheet designated for that purpose. Approximately 19% of these first-year students reported undeclared status and were not included in analyses involving major categories. School information was provided by answering the following questions: "The high school I graduated from was (circle one): public or private" and "The high school I graduated from was (circle one): coeducational, all-girls, or all-boys." Participants indicated how many years of high school

were spent in public/private and coeducational/single-sex schools in spaces designated for that purpose.

Participants completed the Sex Roles Egalitarianism Scale (SRES; King & King, 1993) form KK, which is a 25-item self-report measure of attitudes toward gender equality. Form KK is an abbreviated version of the full 95-item SRES. Items were rated on a 5-point Likert-type scale with five items each from the following role areas: marital, parental, employment, social, and educational. Sample items from the manual are: "Women are just as capable as men to run a business" and "A husband should leave the care of young babies to his wife" (reverse scored). Higher scores on this measure were indicative of more egalitarian attitudes.

Results

As with the first study, we tested for significant differences between the public and private coeducational groups on our a priori hypotheses and found none. For women, no difference was found in SRES scores between those from public versus private coeducational high schools, $t(250) = .57, p = .569$. For men, the result was also nonsignificant, $t(133) = -.82, p = .414$. Therefore, we focused remaining analyses on contrasts involving the single-sex versus coeducational high school context.

Descriptive data for the SRES for the single-sex versus coeducational contrast are presented in Table 2. A $2 \times 2 \times 3$ (Gender \times School Type [single-sex/coed] \times Major Type) analysis of variance (ANOVA) was performed on the full-scale SRES score. Significant main effects were present for gender, $F(1, 392) = 92.71, p < .001$, and school type, $F(1, 392) = 5.15, p < .05$. In addition, there were significant two-way interactions for Gender \times School Type, $F(1, 392) = 5.72, p < .05$, and Gender \times Major Type, $F(2, 392) = 3.29, p < .05$.

The main effect for gender reflected the fact that women ($M = 108.47, SD = 10.60$) held more egalitarian attitudes than men ($M = 91.43, SD = 15.30$), a typical result with the SRES (see King & King, 1993). The main effect for school type reflected lower SRES in students from single-sex

($M = 98.84, SD = 17.49$) than coeducational ($M = 103.09, SD = 14.51$) high schools, an effect that was fully explained through the interaction of this variable with gender. There were no differences in SRES between groups of women from single-sex and coeducational high schools, $t(302) = -.58, p = .56$. However, men from single-sex schools held significantly less egalitarian attitudes than coeducated men, $t(188) = 2.40, p = .017$.

The significant interaction between gender and major type—traditionally female, neutral, or traditionally male—was also examined. The interaction was characterized by a larger discrepancy in SRES scores between women and men in traditionally male majors than was found between women and men in the neutral and traditionally female majors. Post hoc univariate ANOVAs conducted separately by gender were significant only between groups of women, $F(2, 249) = 3.19, p = .043$. Tukey's HSD test indicated that women in traditionally male majors held significantly more egalitarian attitudes than those in traditionally female majors.

Unexpectedly, there was not an interaction between school type and major selection for men. Men from single-sex high schools evidenced lower egalitarianism than their coeducated peers across the three categories of majors.

DISCUSSION

College Major

Gender segregation. Gender segregation is evident in college majors (e.g., Jacobs, 1995) and occupations (see Hyde, 2007, p. 267) in national samples and was readily apparent in our full sample. At the group level our students displayed a pattern consistent with the one described by Jacobs (1995). They had declared sex-segregated majors upon entry to the university, and at graduation, the distribution of majors was even more strongly sex-segregated.

Unequal distribution of the sexes across college majors is of clear economic concern for women. College major at graduation is related to the nature of subsequent employment (Jacobs, 1995) and is an important factor in unequal pay and in lower starting salaries for women even within organizations (Gerhart, 1990). Beyond financial implications, choices about higher education and work are related to personal satisfaction. Overrepresentation of women in gender-stereotyped majors has been posited to interfere with the ideal match between individuals' true interests and their eventual careers (e.g., Betz, Heesacker, & Shuttleworth, 1990, as cited in Jacobs, 1995). Overrepresentation in gender-traditional fields should also negatively affect the career satisfaction of men, particularly those that might be better suited to stereotypically feminine fields.

Social influences. Proponents of single-sex education have identified as one of its benefits the greater willingness of students in single-sex contexts to engage with and

Table 2

Means and Standard Deviations of the Sex-Role Egalitarianism Full Scale Score Version KK by Gender and Major and by Gender and School Type

	Women	Men
Secondary school		
Single sex	109.24 (9.26)	87.44 (15.86)
Coed	108.31 (10.87)	93.06 (14.81)
First-year major		
Traditionally female	107.32 (10.61)	94.97 (20.60)
Neutral	108.07 (10.43)	93.34 (15.02)
Traditionally male	111.14 (10.51)	89.16 (14.96)

persist in subjects that are stereotypically associated with the other sex (e.g., Watson et al., 2002). Our results are consistent with the findings of other researchers, who have reported less stereotyped major choices in college students from single-sex high schools than in those from coeducational high schools (Billger, 2005; James & Richards, 2003; Thompson, 2003). Single-sex high school programs offer unique educational environments at a sensitive time in the development of academic and career interests, and it appears that the moratorium they provide corresponds with the declaration of less gender-restricted majors by women and men.

Persistence through graduation. Secondary school is time-limited. In order to translate into differences in the college experience and the labor market, the single-sex high school's moratorium from gender socialization must result in changes that can withstand the social realities of a world populated by both women and men. Our findings regarding lasting differences between college students from single-sex and coeducational high schools were mixed. Differences in majors between single-sex and coeducated students persisted for men through 4 years of coeducational university, but were gone by graduation for women.

Persistence in gender-neutral college majors by men from single-sex high schools has also been found in a study of men who attended independent high schools through the late 1980s (James & Richards, 2003). Such persistence is important for young men to the extent that it reflects lasting flexibility in the face of gender-based social pressures and enhanced matching of their majors and career choices with their true interests; however, it is unlikely to correspond with meaningful changes in societal levels of academic and job segregation. There was no evidence in our men from single-sex schools of an increased presence in majors that are traditional for women, and overall levels of occupational segregation will not change unless more men pursue traditionally female majors (Jacobs, 1995).

Women from single-sex high schools were just as likely to graduate in gender-traditional majors as their peers from coeducational high schools. The differences they exhibited as first-year students did not persist across 4 years in the coeducational university and thus will not translate into differences in the job market. Reasons for differences in the patterns exhibited by women and men warrant examination in future studies and should be approached with recognition of the different ages at which pressures to limit oneself to gender-stereotyped interests are applied to boys and girls. In our society, boys are afforded little flexibility in behaviors related to academic and career interests from very early ages, while girls are afforded relatively more flexibility until puberty (see Hyde, 2007, p. 202). We propose that these separate trajectories might interact with single-sex high school to produce different responses to stereotype-based social pressure during emerging adulthood. Young men, having experienced social penalties since early child-

hood for stereotype-inconsistent behavior such as pretending to be a nurse instead of a doctor, might experience single-sex secondary school as a reprieve and emerge with increased resistance to such pressures during adulthood. Young women, having had more flexibility in academic and career interests during childhood, might find in the single-sex high school an extension of the pre-pubertal expectations and thus might face the gender-stereotyped pressures of the coeducational university with relatively little prior experience or preparation.

Egalitarian Attitudes

Young women. The relations between egalitarian attitudes, first-year major choices, and single-sex education differed for women and men. Egalitarian attitudes were related as predicted to the declared majors of young women, with women in traditionally male majors exhibiting more egalitarian attitudes than those in gender-traditional majors. Unexpectedly, women from single-sex secondary schools did not evidence more egalitarian attitudes than those from coeducational secondary schools. These findings differ from the conclusions drawn by Lee and Marks (1990) from a national sample, in which they found that women who attended single-sex Catholic secondary schools in the 1980s evidenced less stereotyped attitudes than their peers from coeducational Catholic schools. Potential reasons for the discrepancies between our findings and those of earlier researchers include cohort differences and our use of a sample that is small and homogeneous in choice of college.

Young men. In contrast to the women's results, egalitarian attitudes were not significantly related to the declared majors of young men, and young men from single-sex schools held less egalitarian attitudes than their coeducated peers across major categories. It appears that something about the single-sex setting—perhaps direct sexism (Lee et al., 1994), exacerbation of “macho male cultures” in schools (Jackson, 2002), and/or lack of daily exposure to competent female peers in the high school classroom—corresponds with less egalitarian attitudes in males. Our results suggest that, at least for men, holding more flexible ideas about possible careers for one's gender does not necessarily translate into broader notions of egalitarianism.

Limitations

We have presented research conducted on a demographically similar group of students in a traditional private university setting. Our samples were relatively small for examination of school-based differences, and information on egalitarian attitudes was not available for our longitudinal sample, precluding us from examining the relation of those attitudes to students' persistence over time in nontraditional majors. Our main intent in presenting this research is to stimulate further scientific examination of college majors, including the potential long-term impact of sex-segregated

secondary education, with an eye toward identifying mechanisms that might help explain group differences. Replication of findings is needed with samples from independent high schools and from large doctoral-granting or single-sex universities.

Our studies suffer from three major limitations, two of which are typical of research on single-sex education. First, students were not randomly assigned to their high schools, rendering statements about cause and effect tenuous at best. Variations in demographics between groups were controlled to some extent by our relatively homogeneous sample, yet parental and student motivations for selection of single-sex schools were not controlled and could potentially contribute to group differences. These motivations vary widely *within* single-sex groups (see Lee et al., 1994), creating problems in assessing how exactly they contribute to observed differences. Random assignment to schools is not possible, and the next step in dealing with the myriad potential confounds presented by self-selection of school types should be longitudinal examination of relevant variables (e.g., parental attitudes about gender roles), starting before families have committed to single-sex or coeducational secondary schools.

The second major limitation is the lack of independence of important features of the high schools. All public schools in our samples were coeducational, private schools (all in the first study) were Catholic, and all single-sex schools were private. This limitation is typical of research in this area and the school types included in our study are arguably representative of the secondary education system in the United States. Public schools are overwhelmingly coeducational—there are currently only between 14 and 20 fully single-sex public high schools (National Association for Single Sex Public Education, n.d.)—and over 70% of students enrolled in private coeducational and single-sex secondary schools attend Catholic schools. In our relatively homogeneous sample, the public/private distinction did not correspond with significant differences in the dependent variables from either study, and we proceeded with contrasts based on whether or not the other sex was present in the student body of the secondary school. However, the public/private distinction, and associated demographic differences, may well be of significance in groups with more pronounced socioeconomic diversity. Our results also do not generalize to students from coeducational or single-sex independent private high schools.

A third, related limitation is the examination of only one college setting, a comprehensive Jesuit university. Homogeneity in the setting afforded us a degree of control and provided us with a large proportion of students from private coeducational and single-sex schools; however, it also imposed limitations on the generalizability of our results. There are differences in the ranges of major offerings and likely differences in background variables, interests, and career goals of the students who elect to attend private comprehensive or liberal arts universities rather than large

doctoral-granting universities. Further, there are probable differences between major selections by gender that would be related to these factors. That said, the limitations of our sample should not be overstated. Our results are generally consistent with findings from areas where relevant studies exist.

CONCLUSION

Differences in patterns of major selection between students from single-sex and coeducational high schools have been reported in a handful of published studies including this one. Although alternative explanations cannot be ruled out, these differences lend support to the proposition that the single-sex educational context, and the associated reprieve from traditional gender socialization by peers and teachers, corresponds with increased flexibility in the academic choices made by young people. Gender stereotypes limit perceived options, and a reprieve from the social pressures based in these stereotypes appears advantageous in the short term.

Despite apparent short-term benefits, single-sex secondary schooling is not likely to solve the problem of sex-segregation in college majors and professions. Advantages do not persist for women who subsequently attend coeducational universities, and men from single-sex secondary schools are not more likely than their coeducated peers to enter or graduate in traditionally female majors. Separate education also appears to have a negative impact on egalitarian attitudes in men and should not be expected to improve understanding between women and men. This should not come as a surprise—decades of social psychological research on stereotypes and prejudice instruct us that separation facilitates problems in understanding and interacting with the “other” group.

Pressure is strong, albeit less rigid and overt than it was prior to the 1970s, to follow the kinds of college and career paths dictated by gender stereotypes. Segregation during high school, essentially bypassing stereotype-based socialization for 3 or 4 years, is unlikely to provide a solution at the societal level. Instead, as others have noted, efforts need to be directed at changing the many features of the social environments in our secondary (Lee et al., 1994) and postsecondary schools (Jacobs, 1995) that lend continued salience to gender stereotypes in the academic and career choices of young people.

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