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U.S. Principals' Attitudes About and Experiences with Single-Sex Schooling

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Abstract

Despite a lack of scientific evidence supporting the use of single-sex education, the number of U.S. public schools offering single-sex education has increased. However, our understanding as to why decision-makers have implemented single-sex education is lacking. To address this gap, we surveyed U.S. public-school principals and assessed their attitudes about and experiences with single-sex schooling. Sixty-seven principals from single-sex schools and 193 from coeducational schools participated. The results indicated that principals who had experience with single-sex schooling tended to have more positive attitudes about single-sex schooling, viewed it as more effective, and more often evoked gender-essentialist rationales for the use of single-sex schooling than did coeducational principals. However, both single-sex and coeducational principals noted issues with single-sex schooling. It was concluded that single-sex schooling is not a silver bullet to educational reform and that when single-sex schooling is implemented, one set of issues and problems is substituted for another.

Keywords

single-sex schooling; coeducation; segregation; principals; educational reform

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The history of publicly funded single-sex schooling provides an interesting perspective on changing views related to how boys and girls are taught in US public schools. Through the 19th century, public single-sex schooling was common throughout the world (Rosenberg, 1988). The sexual revolution and women's movement of the 1960s and 1970s, however, led to a drop in public single-sex schooling in many areas. For example, in England, during the last 30 years of the 20th century there was an 80% drop in the number of state sector single-sex schools (Robinson & Smithers, 1999). In the U.S., the passage of Title IX of the Education Amendments of 1972 led to public single-sex instruction almost entirely disappearing.

Recent changes to legislation in the U.S., however, have led to a resurgence in public single-sex schooling. In 2006, as part of the No Child Left Behind Act, the U.S. Congress eased restrictions on single-sex education. For the first time in decades, public schools in the U.S. were allowed to segregate boys and girls in academic classes as long as they: (a) made participation voluntary, (b) provided a comparable mixed-sex class within close proximity (at either the same or different school), (c) reviewed the necessity of the single-sex classes every two years, and (d) showed that the single-sex classes met a government objective that could only be achieved with single-sex schooling (Brown, 2013). Since that time, hundreds of public schools have implemented single-sex education and many more are being planned (Bigler & Signorella, 2011). This is true despite the fact that evidence supporting the effectiveness of single-sex education is lacking (Pahlke, Hyde, & Allison, 2014) and that there are concerns about potential detrimental effects of sex-segregated schooling (Fabes, Pahlke, Martin, & Hanish, 2013; Halpern et al., 2011).

Despite the rising popularity and controversy of single-sex education, very little is known about how school administrators (and particularly in U.S. schools) make decisions about its potential use, including why administrators are drawn to single-sex classes and what their experiences are with these classes. Additionally, no study to date has investigated U.S. public school principals' attitudes about and experiences with single-sex education. The current study aimed to fill these gaps. To do this, we interviewed public school principals across the U.S. who had experience with single-sex classes at their schools. We also interviewed principals who had chosen not to experiment with single-sex classes. In this way, we were able to investigate the reasons why principals were or were not interested in implementing single-sex classes. We also explored the potential impact that single-sex advocacy literature had on principals' decisions to implement or not implement single-sex classes and assessed both single-sex and coeducational principals' perceptions of single-sex classes, including the outcomes they believed would be associated with single-sex classes. Finally, we examined principals' overall opinion of single-sex schooling. Because principals have considerable influence on how their schools and classrooms are managed and organized, exploring their views on this controversial educational topic is important if we are to understand its perceived impact and how policies surrounding single-sex schooling are made.

Background

In the U.S., there is widespread belief that the public schools are failing the children and families they serve. Almost 80% of U.S. adults believe that the public school system deserves a grade of C or lower (Lopez, 2010). Legislators at the federal and state levels have responded to concerns by raising the standards for public schools. Schools that do not improve face serious threats to funding, principals' and teachers' job security, and even school closure (Good, 2008; Good & McCaslin, 2008). Adding to the demand to meet state and national mandates, principals must also please parents and teachers who often have their own ideas about what measures should be taken to improve school quality (Hallinger, Murphy, & Hausman, 1991; White-Smith & White, 2009). Taken together, there is increased pressure on U.S. principals and other educators to find new ways to improve achievement and performance.

Single-sex instruction is one educational practice that has recently seen an upsurge in popularity in the United States. To guide our understanding as to why principals may decide to implement single-sex instruction when faced with pressures to improve educational outcomes, we drew on work related to individuals' folk theories of gender differences (Martin & Parker, 1995). Folk theories refer to individuals' beliefs about the causes of differences. We expected that examining principals' views of single-sex schooling through the lens of their own theories of gender differences would help us to understand principals' views and decisions regarding single-sex instruction.

A key area of individuals' folk theories of gender center on the question of whether and, if so, to what degree the genders differ (Martin & Parker, 1995). Historically, the sexes have been viewed by laypersons and researchers alike as starkly different (e.g., Men are from Mars and Women are from Venus). Furthermore, these sex differences are viewed as biologically based and impervious to effects of experience (see Tavris, 1992). Thus, women's and men's brains are thought to differ in both form and function from each other (Solomon, 1985). Work stemming from advances in neurobiological research has emphasized some of the small yet statistically significant differences between the genders. Research focused on neurobiological differences between the genders has driven much of the discussion about single-sex instruction (for a review, see Eckes & McCall, 2013). For example, dozens of books marketed to both educators and the general public emphasizing these gender differences have been published since 2000. Titles such as *Boys and girls learn differently!* (Gurian, Henley, & Trueman, 2001), *Learning like a girl* (Meehan, 2007), and *Teaching the male brain* (James, 2007) fuel the belief that boys and girls differ so radically in their learning styles, preferences, interests, and motivations that they cannot be taught together in the same classroom. Some of this literature includes specific lesson plans for teaching boys and girls in all-boy or all-girl classrooms (Chadwell, 2010; Gurian, Stevens, & Daniels, 2009; James, 2007, 2009), whereas other publications speak broadly to supposed differences between boys' and girls' learning styles (Gurian et al., 2001). This work appears to be based on *gender-essentialist* beliefs, or beliefs that members of the same gender share inherent, unobservable, and meaningful similarities that cause observed gender differences in behavior (Gelman & Taylor, 2000; Taylor, 1996). For example, some authors argue that girls need cooperative classroom environments to succeed because they are often too

sensitive for competitive environments, whereas boys need competitive classroom environments because they are naturally competitive (Gurian et al., 2001; Sax, 2005). Despite a large body of evidence to the contrary (see Eliot, 2009), single-sex education is being promoted to educators, decision- and policy-makers, and parents and students on the grounds that boys and girls learn differently due to underlying biological factors, including hormone levels, neurological functioning, and even differences in perceptual and activity levels. This perceived ‘sex difference’ approach now informs single-sex pedagogy in hundreds of public schools across the U.S. – and, indeed, throughout the world. Based on this influence, we expected that principals’ own folk theories of gender – and, as a result, views of single-sex schooling – would be influenced by this gender-essentialist perspective.

Understanding the extent to which principals believe in and rely on this literature – and have adopted the folk theories of gender based on gender-essentialist perspectives put forth in the books – is important for two reasons. First, use of these gender-differentiated teaching practices may make gender more salient in the classroom and, as a result, lead to an increase in students’ gender stereotypes, which, in turn, may lead students to limit their educational and occupational aspirations (Bandura, Barbaranelli, Vittorio Caprara, & Pastorelli, 2001; Bigler & Liben, 2006; Halpern et al., 2011; Nosek et al., 2009). Developmental intergroup theory (DIT; Bigler & Liben, 2006) speaks directly to this process. Building on intergroup theory and social-cognitive development theory, DIT attempts to explain why certain social dimensions (such as gender and race) become the basis of stereotyping and prejudice rather than other dimensions (such as handedness). DIT suggests that biases develop when a dimension acquires psychological salience, which occurs through a combination of four factors: perceptual discriminability of groups, unequal group size, explicit labeling of group membership, and implicit use of groups. In single-sex schools and classes, the category of gender meets all of these requirements. According to DIT, once gender gains psychological salience among children, the development of biases and stereotypes is facilitated by four factors: essentialism, in-group bias, explicit attributions, and implicit attributions. Importantly, single-sex schooling may facilitate an increase in all of these factors through children seeing the segregation of the genders and hearing teachers’ and schools’ messages about the differences between girls and boys. As a result, single-sex schooling may lead to an increase in children’s endorsement of gender stereotypes.

Second, neuroscientists and other researchers (Eliot, 2009; Halpern et al., 2011) have noted that the information included in these single-sex teaching books is often misquoted, misrepresented, or outdated. The specific concern is that claims about biologically hard-wired sex differences are being used to justify educational arrangements in which boys and girls are trained to conform to gender-role stereotypes rather than to challenge them.

Importantly, although many supporters of single-sex schooling draw on folk theories emphasize biologically-based, essentialist differences between boys and girls, others draw on folk theories stemming from social psychological approaches that emphasize the importance of social context and social interaction in influencing students’ behavior (Rudman & Glick, 2008). Some worry, for example, that boys’ sexist attitudes and behaviors decrease girls’ interest in traditionally masculine STEM fields (Sadker & Sadker, 1994). Classrooms that do not include boys, these proponents of single-sex schooling argue,

are more supportive of girls' academic achievement in counter-stereotypic domains (Shapka & Keating, 2003).

Opponents of single-sex schooling, in comparison, also often draw on folk theories that emphasize gender similarities and social justice perspectives. These opponents note that differences between males and females are actually quite small in most educational-related and psychological domains (Hyde, 2005). Thus, opponents of single-sex schooling worry that gender-targeted classrooms do not address the needs of the majority of students, who are in the area of gender-overlap on the relevant traits. Opponents of single-sex schooling who take a social justice perspective believe that separate is rarely equal and, furthermore, that children learn more when they are exposed to diverse environments that promote cooperation (Rustad & Woods, 2004). Reducing cross-group contact in the classroom, they argue, results in boys and girls who are more gender stereotyped and who miss out on opportunities to learn from and cooperate with the other gender (Jackson & Smith, 2000). We expected that principals who have not adopted single-sex instruction (i.e., coeducational principals) would have views of single-sex instruction that are consistent with these views and, furthermore, that their lay theories of gender differences would be less reflective of an emphasis on essentialism than would single-sex principals.

In summary, the purpose of this study was to explore principals' general attitudes about and experiences with single-sex education in their schools. Our purpose was not to review the scientific literature related to the debate on the effectiveness of single-sex education (see Halpern et al., 2011; Klein, 2012; Signorella, Hayes, & Li, 2013 for examples of such reviews). Instead, our focus was on developing a better understanding as to how principals make decisions about whether or not to implement single-sex education and the roles that both scientific and unscientific factors have on these decisions. Our goal is not to provide a micro-analysis of principals' decision making in this area but, given that dearth of information related to principals' beliefs about single-sex education, we wanted to provide the first descriptive information related to the general issues principals have about and in response to single-sex education.

We expected that principals' perspectives would be markedly different depending on their motivations for and experiences with single-sex classes, so we recruited principals who had and had not used single-sex education in their schools. We expected that these principals' perspectives and experiences would reflect differences in their folk theories of gender differences and ecological systems. To our knowledge, this study is the first to explore contemporary U.S. principals' attitudes about and experiences with single-sex classes. As such, this study adds important information to the on-going discussions regarding single-sex public school education and issues related to its implementation and outcomes.

Methods

Participants

Participants were 260 principals at U.S. public schools that served children between the grades of kindergarten and 12th grade (ages generally 5 to 18 years). These schools included 31 elementary schools, 4 intermediary schools, 23 middle schools, 3 junior high schools, and

6 high schools (mean school size = 684.7 students, range 105 to 2190). On average, 52% of students in participating schools qualified for free or reduced price lunch (range 0 to 97%).

Of the 260 principals, 67 had implemented single-sex classes in their schools (25 females, 42 males; mean years as principal = 5.67, range .50–25 years) and 193 had implemented only coeducational classes (84 females, 109 males; mean years as principal = 5.95, range 1–37 years). About 68% of the principals were in schools located in the South, 13% were in the Midwest, 11% were in the West, 5% were in the Southwest, and 3% were in the North.

Procedure

Potential participants were identified through online lists of public schools. The majority of potential single-sex principals were identified through the National Association for Single-Sex Public Education's (NASSPE) online list of public schools offering single-sex classes (previously listed at <http://www.singlesexschools.org/schools.htm>). As part of the recruitment process, we contacted every school listed on the NASSPE website. Online newspaper articles and word of mouth were also used to identify public schools with single-sex instruction. Once we had identified principals in single-sex schools, we worked to recruit principals from coeducational schools that were similar to those in single-sex schools. For example, given the popularity of single-sex schooling in the state of South Carolina, we contacted all of the principals at coeducational schools in South Carolina. Principals were contacted via postcard, phone, and/or email. In each form of contact, we explained that the goal of the study was to understand principals' experiences with and opinions about single-sex schooling. Principals were given the option of completing the survey over the phone or through the website Survey Monkey. During the recruitment phase, we contacted 343 potential principals in single-sex schools and 3,760 potential principals in coeducational schools, resulting in a response rate of 19.5% for principals in single-sex schools and 5.1% for principals in coeducational schools (Note: henceforth principals in single-sex schools are referred to as single-sex principals and those from coeducational schools are referred to as coeducational principals.)

Measures

Choices about single-sex schooling—Single-sex principals were asked to rate the extent to which their decision to offer single-sex classes at their schools was related to seven factors: school district officials' interest, teachers' interest, parents' interest, hearing about other schools that had tried the classes, lower than desired achievement scores, student behavior issues, and boys' behavior issues in particular. Single-sex principals indicated their agreement on a 4-point scale (1 = *not at all*, 2 = *not very much*, 3 = *sort of*, 4 = *very much*). Following the seven listed items, single-sex principals were asked if there had been any other factors that led them to first think about implementing single-sex classes. To assess their attitudes about single-sex classes and/or possible barriers they may have experienced that prevented them from implementing single-sex classes, coeducational principals were asked why they had never implemented single-sex classes in their school.

Teacher training—Single-sex principals were asked if the teachers at their schools had received any formal training in single-sex instruction, such as conferences, book studies, or

on-site training. If they responded yes, they were then asked to give details about the training. Coeducational principals were asked if they had ever sought out any information about SS schooling or teacher training and if so, what materials they discovered.

Perceptions of the effects of single-sex schooling—Single-sex principals were asked to rate the extent to which they believed single-sex classes would improve academic, behavioral, and teacher outcomes (e.g., “To what extent did you expect to see changes in achievement for girls in math and science classes?”). Expected outcomes were rated on a 4-point scale (1 = *not at all*, 2 = *a little bit*, 3 = *sort of*, 4 = *very much*). Afterward, principals were given the option of discussing additional outcomes they expected to result from single-sex classes.

Coeducational principals were asked to predict how academic, behavioral, and teacher outcomes would change *if* they were to implement single-sex classes at their school. Coeducational principals were asked to rate items on a 3-point scale (1 = *get worse*, 2 = *no change*, 3 = *get better*).

Overall perceptions of single-sex classes—Single-sex principals were asked whether they continue to offer single-sex classes at their schools. Principals were then asked the extent to which 12 factors related to stakeholders’ opinions, standardized test scores, student behavior, and logistics associated with class organization influenced their decision to keep or discontinue single-sex classes (e.g., “To what extent was your decision to continue (or move away from) single-sex classes influenced by boys’ behavior in the classrooms?”). These items were rated on a 4-point scale (1 = *not at all*, 2 = *not very much*, 3 = *sort of*, 4 = *very much*). Subsequently principals were asked if there had been any other factors impacting their decisions. Single-sex principals were asked to rate their overall support for single-sex classes on a 4-point scale (1 = *extremely unsupportive*, 2 = *a little unsupportive*, 3 = *a little supportive*, 4 = *extremely supportive*). Finally, single-sex principals were asked the open-ended question: “What would your advice be for a principal interested in implementing single-sex classes in their school?”

Coeducational principals were asked if they experienced a series of issues in their school that mirrored those issues single-sex principals were asked about. Namely, coeducational principals were asked, “Do you experience a problem with any of the following at your school?” If principals said they did experience a problem with an issue, they were asked: “Do you think it is because you have both boys and girls in your school?”

Coeducational principals were asked to rate their overall support for single-sex classes on the same 4-point scale the single-sex principals used (1 = *extremely unsupportive*, 2 = *a little unsupportive*, 3 = *a little supportive*, 4 = *extremely supportive*). Coeducational principals were also asked to expand upon what they believed were the advantages and disadvantages of single-sex classes.

Results

The goals of the study were to identify and describe both single-sex and coeducational principals' attitudes about and experiences with single-sex education. To accomplish this goal, we present a series of descriptive analyses on principals' responses to both closed- and open-ended questions. Principals' responses to the open-ended questions were analyzed using *modified analytic induction* (Bogdan & Biklen, 1992), a method related to grounded theory in which researchers approach the data with rough hypotheses emerging from theory and prior research. We expected principals' views of single-sex schooling to reflect folk theories that are consistent with gender-essentialist perspectives. To increase the accuracy of this process, the last three authors all independently read through the interviews to glean information related to our purpose of assessing principals' attitudes about and experiences with single-sex schooling. Throughout the presentation of the results, we use principals' qualitative responses to add depth and context to the quantitative results.

Choices About Single-Sex Schooling

To examine the factors that influenced principals' decisions about whether to implement single-sex classes, we asked single-sex principals about what led them to consider implementing single-sex classes, and we asked coeducational principals why they had not implemented single-sex classes in their school. Principals' responses addressed student- and system-level factors.

Student-level factors—Many of the single-sex principals indicated that they were drawn to the idea of implementing single-sex classes in the hope that they would alleviate some of the problems with student outcomes in their schools. On average, single-sex principals cited low student achievement as an influential reason for deciding to implement single-sex classes ($M = 3.27$, $SD = .93$ on a 4-point scale). Almost 75% of the single-sex principals ($n = 50$) were particularly concerned about waning student achievement. One single-sex principal at a high school explained, "We really needed to try to raise test scores." An elementary school single-sex principal also discussed the need to improve test scores; "Test scores were the sole reason we decided to try single-sex classes." For five single-sex principals, the gender gap in achievement – as opposed to low overall achievement – was of particular concern; at two of these schools girls were underperforming and at three schools boys were underperforming.

Single-sex principals also noted concerns about student behavior as a reason for implementing single-sex classrooms ($M = 2.78$, $SD = 1.09$). Some single-sex principals ($n = 7$) described a relation between behavioral issues and low achievement at their schools. One single-sex principal at a middle school explained, "Social interactions were causing academic achievement to slide because students were reluctant to participate due to the opposite sex being present." Another middle school single-sex principal was concerned with students being distracted by the other sex and wanted to boost both boys' and girls' confidence levels in classrooms by separating them. Despite concern about the distractions other-sex peers may provide, only a few single-sex principals specifically cited problems with inappropriate flirting ($n = 3$).

In comparison to single-sex principals who made changes due to concern for student outcomes, many coeducational principals ($n = 30$) avoided making changes due to satisfaction with the current level of student outcomes. A middle school coeducational principal stated, “We have never had any reason to show a clear need for single-sex classes.” A high school coeducational principal simply stated, “We have no need. Our academics are in good shape and our discipline problems are limited.”

Moreover, despite the fact that some coeducational principals expressed concerns about student outcomes, a group of them just did not believe that single-sex classes would improve student outcomes and thus chose not to implement them. Coeducational principals cited a lack of empirical evidence to support single-sex classes. For example, a coeducational principal of an elementary school said the research she had read was “iffy at best.” These general concerns often accompanied concerns about the lack of appropriateness of single-sex classes for preparing students for “real world settings” involving both sexes ($n = 32$). For example, a coeducational principal of an elementary school told us, “I strongly believe that single-sex classes are not realistic to the real world settings. Our students will have to adapt at some point in their life to work with people of the other gender.” One high school coeducational principal expressed belief in the coeducational system: “Our students are very successful in the coed model we use. I have been an educator for 27 years and have not found single-gender courses to be the answer to any dilemmas I have been involved with.” Notably, two coeducational principals compared single-sex classes to race segregation. One high school coeducational principal asked, “Are we looking at same-race classrooms?! No!” Another principal of a coeducational elementary school said, “We would never segregate according to culture or ethnicity. It seems just as absurd to segregate according to gender.”

These findings reveal important and fundamental differences in single-sex and coeducational principals’ views about the effect of single-sex classes on student-level factors that affect their perceptions and decisions. However, principals’ views concerning the role of system-level factors also seemed to reflect different experiences in their schools and communities.

System-level factors—Many single-sex principals indicated that stakeholders influenced their decisions about single-sex classes. Of all the stakeholders, teachers were among the most influential ($M = 3.23$, $SD = .98$; on a 4-point scale), with some principals saying teachers were the only reason they considered starting single-sex classes. For example, one elementary school single-sex principal said, “One teacher in particular was passionate and pushed it through.” In one high school, a teacher completed a project on single-sex education and then presented it to the faculty and principal. Based on the teacher’s presentation, the decision was made to implement the classes.

Single-sex principals also discussed the desire to keep community members and families happy and invested in the school. “The school was at a crisis and we needed to show the community that we were invested with their students and wanted to make a difference,” a principal of a single-sex middle school informed us. Seven single-sex principals were similarly concerned about keeping parents happy. These single-sex principals explained that they thought parents would like the novelty of the classes. “We were testing out parents’

needs and wants. We wanted to see what we could offer parents that was different, and we thought parents might buy into it,” one single-sex principal explained.

Other single-sex principals ($n = 27$) said they were influenced directly by surrounding communities. For example, several single-sex principals in South Carolina explained that there was a state-wide focus on school choice. Hearing about the experiences of other schools led them to try single-sex classes.

In contrast, many coeducational principals ($n = 32$) believed that support for single-sex classes was lacking. One coeducational principal of an elementary school said that he was in favor of implementing single-sex classes, but he could not proceed because, “The superintendent does not support it.” Similarly, another elementary school coeducational principal cited “not enough buy in from the staff” and “not a clear line of support from my supervisor,” as reasons for not implementing single-sex classes. A coeducational principal of another elementary school noted that he wanted to implement single-sex classes but had experienced “very negative reactions from parents that prohibited implementing single-sex classes.”

Finally, many coeducational principals said that they did not consider implementing single-sex classes because of logistical barriers. Specifically, 55 coeducational principals cited scheduling and budget issues associated with implementing single-sex classes in their schools. As noted by one high school coeducational principal, “We do not have the student population or the staff to support the change.” Similarly, another high school coeducational principal informed us, “Scheduling would be very difficult and we don’t have enough classrooms and teachers.” Taken together, principals’ discussions of the role of system-level factors in their choices about single-sex schooling emphasized the important role stakeholders had in impacting principals’ decisions.

Single-Sex Advocacy Literature and Trainings

As noted previously, the recent rise in single-sex advocacy literature may impact principals’ attitudes about single-sex schooling. One theme that arose in the interviews with the single-sex principals was the influence that single-sex advocacy publications and training conferences had on principals’ decisions about whether and how to implement single-sex classes. Over half of the single-sex principals ($n = 37$) had read popular educational books written by single-sex schooling advocates and 12 of those single-sex principals specifically stated that the books influenced their decision to implement single-sex schools. One middle school single-sex principal said she required the teachers to read and discuss such books. Another single-sex principal of an elementary school formed reading groups with single-sex advocacy articles and books. Single-sex principals described these books as being quite influential. An elementary school single-sex principal explained that the books had “lots of practical, less theoretical work, so they were helpful to teachers.”

A large number of single-sex principals ($n = 48$), some of the same principals who read books for training, also attended single-sex conferences and workshops. Other single-sex principals said they brought in a private single-sex consultant ($n = 10$), sent their teachers to single-sex conferences ($n = 10$), or attended a one-week single-sex instruction training

provided by some of the authors of the single-sex advocacy literature ($n = 7$). One elementary school single-sex principal told us that the school organized a reading group “to learn how boys and girls learn differently. The author of that book came to speak at the school and gave workshops to our teachers.” Single-sex advocacy literature, as well as training, consulting, and conferences organized by the authors of this literature, seem to be a driving force in the single-sex principals’ attitudes about single-sex schooling.

Coeducational principals were less specific about the materials they sought when researching single-sex classes. For example a high school coeducational principal told us, “I just read literature on same-sex classes from the Internet.” Others also cited Internet searches ($n = 4$) or empirical research databases ($n = 5$). Most, however, mentioned reading research or books focused on single-sex instruction ($n = 49$). One principal informed us she had, “attended a workshop conducted by our district to inform us of the data, visited a school that does single gender, and read articles.”

Anticipated Outcomes of Single-Sex Schooling

We asked single-sex principals to comment on the extent to which they expected single-sex schooling to improve outcomes *before* they implemented the classes. Single-sex principals expected single-sex classes to positively impact many outcomes and also reported that single-sex classes actually led to improvements in many of the outcomes. Specifically, they expected single-sex classes to improve standardized tests scores, classroom achievement, interest in academic subjects, behavior problems, teasing, bullying, unwelcome flirting, and teacher happiness. For example, five single-sex principals discussed a perceived improvement in both boys’ and girls’ confidence levels and achievement. “Student confidence increased, and more leaders emerged,” said a single-sex principal of an elementary school. Another single-sex principal said that, “Almost all students expressed more confidence in class to speak out loud without the other gender.” Finally, a middle school single-sex principal claimed that single-sex classes “boosted achievement, but only in math.”

Other positive outcomes cited by single-sex principals indicated increases in teacher and parent happiness, improvements in student-teacher relationships, better student relationships, and improved academic achievement. “Parents’ happiness increased because they liked having choices,” a middle school single-sex principal said. Another middle school single-sex principal reported that, “There are now better relationships between students and teachers.” Furthermore, an elementary school single-sex principal claimed, “Bonding between same-gender kids is stronger; they have stronger friendships.”

Importantly, there were also reports from single-sex principals that single-sex classes led to negative outcomes. Indeed, almost 33% of single-sex principals said that things got worse in at least one area (e.g., student behavior, achievement). Eight single-sex principals discussed adverse behavioral outcomes. “There were discipline problems in all-male classes,” a single-sex principal of a middle school informed us. Another middle school single-sex principal said, “Although boys’ behavior was much better, girls’ behavior got worse.” Six single-sex principals reported that achievement got worse after the single-sex classes were implemented. Another single-sex principal reported that students’ interest in subjects went

down after the classes were implemented. And six single-sex principals reported that their teachers' happiness decreased after they implemented single-sex classes. Finally, five single-sex principals said they saw no changes in the behavior problems they were trying to change. For instance, a single-sex principal of an intermediary school told us, "Boys were still masking masculinity and girls were still very flirtatious."

Overall Perceptions of Single-Sex Classes

At the end of the interview, we asked principals how supportive they were of single-sex classes. On average, the single-sex principals were, not surprisingly, very supportive of single-sex classes ($M = 3.78$, $SD = .55$; on a 4-point scale). Coeducational principals, in comparison, were less supportive ($M = 2.37$, $SD = .92$; 2 = "a little unsupportive").

Advantages—Seven single-sex principals reported improvements in academics and students' attitudes towards school. For example, a middle school single-sex principal explained that they continue to have single-sex classes because students' attitudes towards school improved. Another elementary school single-sex principal thought single-sex classes led to both achievement and behavior improvements; he claimed single-sex classes were a great success and a community builder. A single-sex principal in an elementary school expressed specific improvements in "boys' language arts achievement, girls' math achievement, and kids' behavior."

In contrast, several coeducational principals ($n = 31$) said they could not think of any advantages of single-sex classes. One coeducational principal of a middle school stated, "There are no advantages. I think it would be a ridiculous idea."

There were, however, other coeducational principals who thought single-sex classes might offer some advantages. Thirty coeducational principals said that single-sex classes may reduce other-sex distractions. For example, one coeducational principal of a high school said that single-sex classes, "might help put the focus of each group on academics instead of impressing others." Other coeducational principals ($n = 18$) discussed that it would be easier to tailor classes to gender-typed interests. One middle school coeducational principal explained that single-sex would, "Benefit student learning via benefits of teacher planning due to recent brain-based research on learning differences." Other coeducational principals ($n = 16$) cited possible improvements in behavior issues with single-sex classes. For instance, a coeducational principal of a high school reported that he thought single-sex classes might decrease "bullying issues and girl drama." Another junior high coeducational principal said that by separating boys and girls you could "eliminate sexual harassment, flirting, rumors, and reduce competition for relationships."

Disadvantages—Although single-sex principals were supportive of single-sex education, they did cite challenges associated with it. As an elementary school single-sex principal said, "As class sizes increase due to budget cuts, there are fewer teachers at each grade level, which makes offering the choice of both single-sex and coeducational classes more challenging." Another single-sex principal explained that the budget cuts were making it difficult to continue the program: "We learned that for the boys' classes to be successful, the

teacher to student ratio has to be 1 to 20 or lower. That has become difficult each year with funding cuts.” Four other single-sex principals discussed similar budget issues.

There were also indications that some of the single-sex principals experienced significant barriers or challenges as a result of implementing single-sex classes. Fifteen of these single-sex principals reported feeling extremely challenged by the logistical issues associated with the program. One single-sex principal explained that he discontinued single-sex classes because of “logistics with balance and class sizes.” Another single-sex principal explained, “Due to budget constraints we have lost five teacher allocations over the past two years, which made staffing the [teacher] teams difficult.”

Coeducational principals perceived many potential disadvantages of single-sex classes. Fifty-one coeducational principals cited behavioral issues and lack of real world comparability as disadvantages of implementing single-sex classes. For example, an elementary school coeducational principal said, “Homogeneous groupings of any kind have some limitations in terms of real world comparability.” Another coeducational principal of a junior high claimed that implementing single-sex classes would just, “give you a different set of problems to deal with.” A junior high coeducational principal explained, “Students need to learn to engage appropriately with the opposite sex. This is a life skill.” Other coeducational principals ($n = 25$) worried that single-sex classes might be detrimental to peer relationships. For example, a coeducational principal of an elementary school stated, “Students would struggle in forming multi-sex peer relations.” A junior high coeducational principal said she opposed single-sex classes because, “Children must learn social skills for working cooperatively with others and [segregating boys and girls] could have negative effects on social growth.” Another coeducational principal of a middle school said, “I think by having same sex classes or schools, this promotes discrimination; what will be next? Only the smart kids get to advance in their schooling?”

Many coeducational principals ($n = 52$) expressed concerns regarding the logistical issues associated with single-sex classes. For example, one coeducational principal of an elementary school said, “There are a few boys I really need to keep separated and I would not be able to do that with single-sex classes.” Others thought that same-gender behavioral issues (i.e., girl drama, boys fighting) were greater than cross-gender issues (i.e., sexual harassment). Many claimed they did not have the appropriate amount of staff to handle single-sex scheduling issues.

Finally, five coeducational principals cited parents’ and stakeholders’ lack of support for single-sex classes as a barrier. A coeducational principal of a junior high said a disadvantage would be, “Complaints from stakeholders. A big change like that always brings about resistance and political debate.”

Discussion

In the U.S. there has been a recent increase in the number of public single-sex schooling programs. This rise has taken place despite the fact that the scientific evidence in support of single-sex schooling is weak and that we know very little about the factors that have led

public school officials and educators to implement these programs. In the current study, we addressed this important gap by surveying public school principals across the U.S. about single-sex schooling. The findings emphasize the divergent perspectives of principals who have or have not implemented single-sex classes in their schools. Responses call attention to both the perceived positive and negative aspects of single-sex education from the perspective of the principals and add to the psychological and educational literature about single-sex schooling. Moreover, the reactions and experiences of the principals highlight the fact that single-sex education is not a ‘silver bullet’ to any of the issues educators face in contemporary U.S. public schools and that single-sex classes not only do not solve these issues but often introduce a new set of problems.

Consistent with our expectations, many of the single-sex principals cited concerns about student achievement as the main motivator for implementing single-sex classes. Changes to educational policies in recent years have put increasing pressure on principals to improve student outcomes. If a sufficient percentage of students do not pass state achievement exams, principals face the threat of budget cuts and job loss (Good, 2008; Good & McCaslin, 2008). Single-sex principals in the current sample discussed the pressure they faced to make changes; for example, when asked to explain why they implemented single-sex classes, one principal noted that, “We really needed to try to raise test scores.” In the face of these pressures, principals seemed willing to experiment, and single-sex classes is part of that experimentation. There were some indications that coeducational principals had not implemented single-sex education programs because they did not face the same pressures to increase student achievement as the single-sex principals; in other case, coeducational principals did not believe that single-sex classes would lead to needed improvement. Such findings suggest that differences between single-sex and coeducational principals are due to differences in the schools they serve as well as their folk theories about gender and education. These results highlight the importance of considering the system-level factors to understand principals’ decision making.

Principals’ attitudes and decisions about single-sex education were also influenced by their beliefs about stakeholders’ desires. Many of the single-sex principals appeared to implement single-sex education based on their desire to increase stakeholders’ satisfaction with the schools. Furthermore, others hinted that even when not presented with needs to ameliorate issues with dissatisfied stakeholders, they tried single-sex classes as a way to keep parents interested and ensure school enrollment remained high. For example, a principal who was not struggling with achievement or dissatisfied stakeholders nevertheless asserted, “Parents like choices.” In comparison, some coeducational principals discussed the perceived lack of support they received from stakeholders as a rationale for why they did not implement single-sex schooling options. This is consistent with past research that has investigated stakeholders’ influence on principals’ decisions about other educational initiatives (White-Smith & White, 2009). If parents, teachers, and community members are believed to have opinions about the use of single-sex instruction in the classroom, then principals are often respond. The degree to which principals respond to this appears to be in part a function of their folk theories of gender and their perceptions of their stakeholders’ opinions of educational initiatives.

Although many single-sex principals and advocates perceived positive benefits and outcomes of single-sex education, the systematic reviews of the extant research based on single-sex schooling have failed to find consistent positive outcomes associated with single-sex education and have furthermore highlighted potential negative consequences associated with increased gender stereotypes and gender bias (Fabes et al., 2013; Pahlke et al., in press). Moreover, there is even less evidence supporting gender-differentiated teaching practices (Halpern et al., 2011). Despite the lack of evidence, single-sex principals were overall very supportive of single-sex schooling. These principals believed, on the whole, that achievement and behavior improved in their schools after they instated single-sex classes. Notably, there were some single-sex principals who discussed the negative implications of single-sex schooling (e.g., increased behavior problems among both boys and girls, student dissatisfaction, negative teacher reactions). One single-sex principal noted that although he thought single-sex education would eliminate a lot of cross-gender interactions, he claimed that “girls were being drama queens and boys were still masking masculinity.” In comparison, coeducational principals were unconvinced about these supposed positive effects of single-sex schooling.

Moreover, single-sex principals seemed to be (with good reason given the high-stakes testing environment in which they work) focused on short-term gains in student behavior and performance, rather than considering the longer-term consequences associated with single-sex schooling. For example, when classrooms are organized on faulty folk beliefs about the relative abilities of girls and boys to sit still, work collaboratively, or tolerate stress, the end result may be classrooms that ultimately do a better job preparing boys with skills needed for professional success in the adult world but relegating girls to classrooms that modify formal instruction to the purported biological need of females to talk amongst themselves (Williams, 2010). Several coeducational principals recognized this issue and identified possible stereotyping and gender inequity as factors in their decision not to implement single-sex education in their schools.

As noted, the discrepant perspectives of single-sex and coeducational principals seem to be due, at least in part, to the differences in the principals’ folk theories of gender – and specifically in their endorsement of gender-essentialist perspectives on learning. Single-sex principals discussed their reliance on single-sex advocacy literature that espouses gender-essentialist perspectives. The message from this literature is that boys and girls have inherent differences that lead them to learn differently. Many of the single-sex principals in our sample endorsed this perspective. They believed that there are inherent differences in the way that girls and boys develop and learn that make it impossible to optimize instruction when girls and boys are together in a classroom. Neuroscientists have noted their concerns with this gender-essentialist perspective on learning, however. Little is known about differences between the brains of boys and girls and the few differences that have been identified are small and not necessarily related to learning (Eliot, 2009). Efforts to inform principals (and teachers and parents) about current neuroscience research may be particularly important at this point in U.S. educational history, when principals are forced to make decisions quickly about the effectiveness of educational programs.

Although single-sex principals were quite supportive of single-sex schooling, many of these principals discussed challenges associated with gender-segregated schooling. Indeed, such challenges led 17 of the single-sex principals to abandon single-sex schooling. In general, principals discussed the logistical challenges they faced. Particularly in the context of shrinking school budgets, maintaining separate all-boy, all-girl, and coeducational classrooms can be a challenge. Policy makers who are considering the benefits and costs of single-sex classes should be aware of this challenge. As the educational system works to become more efficient in the use of increasingly limited funds and resources, school officials should carefully consider the costs of single-sex programs.

In evaluating the current study, there are several limitations that should be noted. The findings presented in this study are specific to the principals whom responded to the survey. Although both single-sex and coeducational principals were sampled from the same districts across the U.S., the overall response rate was low. Therefore, it cannot be ruled out that there is something specific about the types of principals who responded to email or phone call invitations to participate in the study. Additionally, although we communicated to principals that their answers were completely confidential and anonymous, it is possible that there was some social desirability in principals' responses. Despite these limitations, this study provides the first insights into principals' attitudes and reactions to single-sex schooling – an overlooked but critical gap in the current literature.

In conclusion, as single-sex schooling is considered as a strategy for U.S. public school education, it is important for researchers, policy makers, and stakeholders to understand the factors that lead principals to adopt – or avoid – single-sex classes. Principals who have adopted single-sex classrooms at their schools have markedly different perspectives about the needs for and effects of single-sex schooling than principals at schools that have only coeducational classrooms. The need to balance principals' views and expectations with the scientific evidence is also noted. There is no body of evidence supporting the effectiveness of single-sex schooling and the principals' comments, from both single-sex and coeducational principals, suggest that single-sex schooling is not a panacea and may simply trade one set of perceived problems for another. As policy makers and researchers work with principals in the coming years to identify educational policies that will raise academic achievement, performance, and engagement, discussions about the science behind single-sex instruction and the potential logistical challenges associated with single-sex education will be particularly important.

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