Challenges in Evaluating Single-Sex Education

Margaret L. Signorella
The Pennsylvania State University

Author Notes
Psychology Department, The Pennsylvania State University, Greater Allegheny Campus; msignorella@psu.edu

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Abstract

As a conclusion to the two-part special issue on single-sex education in *Sex Roles* (Signorella and Bigler 2011, 2013a), this *Feminist Forum* opens with a concluding commentary by Liben (2015), followed by commentaries on Liben’s paper from three different perspectives. Liben provides an historical overview of gender and education in the U.S. to the present and identifies different approaches to the role of gender in cognition and behavior (essentialist, environmentalist, constructivist). She also reviews evidence on the impact of single-sex education in the U.S. in the context of these and other differing perspectives. She concludes by examining the role of values in drawing conclusions about single-sex education. Three comments on the matters raised by Liben explore the biological (Fine and Duke 2015), legal (Sherwin 2015), and public policy (Huston 2015) aspects of the single-sex education controversy, with the latter two focusing on U.S. laws and public policy issues. I use a recent news article concerning legal changes in the U.S. to exemplify the ongoing disputes in this arena. The papers in this collection provide important directions for future research, as well as guidelines for researchers who wish to communicate their findings effectively to the public and to policymakers.
Challenges in Evaluating Single-Sex Education

The resurgence in single-sex schools and classrooms in the U.S. during the 2000s was a key motivation for the symposium on the subject at the Gender Development Research Conference in 2010 (Bigler et al. 2010; Signorella 2010) and the subsequent two-part special issue of *Sex Roles* (Signorella and Bigler 2011, 2013a). To integrate the collections and place the two volumes within a wider framework, Liben (2015) provides a comprehensive essay, focusing on the U.S., and Fine and Duke (2015), Huston (2015), and Sherwin (2015) comment on and extend Liben’s paper from three different perspectives.

Liben (2015) begins her commentary with a historical snapshot spanning the early years of the U.S. to the present. She demonstrates the long-standing tendency for educational writers and commentators to use whatever characteristics are ascribed to women and men to make the case for gender-differentiated roles, and thus the advantages of gender-differentiated schooling. The pattern is illustrated by writings from Thomas Jefferson, second President of the U.S. (1801–1809), to William DeWitt Hyde, Bowdoin College president (1885–1917, Liben 2015) to Leonard Sax and Michael Gurian, both current authors of popular books and consultants to schools about gender and education (Eliot 2013; Liben 2015; Sherwin 2015). Even though the exact conceptions of gender roles changed over time, the interpretations were constant in portraying the genders to be in contrast, in opposition, and separate. Jefferson supported girls’ education in the arts, and social and household skills, but otherwise viewed the more general societal value of education as something for White males (Liben 2015). Hyde admitted that women had intellectual skills often surpassing those of men, but then concluded that academic pursuits would destroy them physically and
emotionally, and would fail to support the larger societal order as nature intended (Liben 2015). Sax and Gurian seem willing for women and men to pursue any interest or occupation, and value education for all, but conclude that a gulf between the essential natures of girls and boys argues for separate classrooms or schools for some, with gender-specific instructional methods (Liben 2015; Signorella and Bigler 2013b).

The historical overview led Liben (2015) to the contention that gender essentialism is an underlying presumption in both the historical examples and the current seemingly widespread infatuation with single-sex classes and schools. Gender essentialism is defined, following Gelman and Taylor (2000), as viewing any gender differences as “natural” and rooted in biological and evolutionary processes. Liben contrasted gender essentialism with two different perspectives, gender environmentalism and gender constructivism (Liben and Bigler, 2002). The latter two models emphasize the role of the environment in shaping gender-related outcomes, and in the case of constructivism, the reciprocal role of individuals as active construers of their experiences.

Given that one of the key planks in the essentialist argument is the supposed biological bases (genetics, hormones, brain structure and function) for gender dichotomies, Fine and Duke’s (2015) commentary is instructive. They contend that both behavioral and neuroscientific data pose a significant challenge to the essentialist view (Fine and Duke 2015, this issue). Some prominent proponents of single-sex education give significant attention to brain development and function as supporting an essentialist and difference-focused approach to gender (e.g., Eliot 2013; Liben 2015), but Fine and Duke (2015) reveal much gender overlap and ongoing change. In contrast to the complexities of the empirical work, Fine and Duke (2015, this issue) also
document the accompanying tendencies for some interpretations of neuroimaging and other brain-related research to be flavored by discourse that claims “hardwired, natural, or innate [emphasis theirs]” gender differences. Fine and Duke (2015, this issue) conclude that gender essentialists “reliance on innateness as a single biological property to be afforded deference” is unwarranted.

In a second commentary, Sherwin (2015) examines the current legal state in the U.S. of public single-sex classes and schools. Gender essentialism as an argument for single-sex schooling “has been rejected almost entirely as legally invalid,” according to Sherwin (2015, this issue). Sherwin (this issue) further indicates that the popular anecdotes used by many single-sex schooling proponents have “been deemed insufficient” in the legal domain. Nonetheless, Sherwin’s organization, the ACLU, discovered in the “Teach Kids, Not Stereotypes” investigation numerous instances of violations of Title IX, the federal statute prohibiting sex discrimination in federally funded education (ACLU, n.d. a; ACLU n.d. b; Sherwin 2015). Sherwin and colleagues further discovered that gender essentialist arguments were at the forefront of justifications for single-gender schooling (e.g., see Sherwin and Brandt-Young 2012).

Sherwin (2015) also reviews important recent regulatory twists and turns in regard to Title IX. As Sherwin (2015) and others have shown, the 2006 regulation change in Title IX that followed from the passage of “No Child Left Behind” appears to have caused the increase in single-sex classes and schools, as there was an explicit provision citing single-sex education as an innovation that could be publicly funded. Sherwin (2015, this issue) concludes, however, that ‘most of the recently instituted single-sex programs’ are not in compliance with even the 2006 changes in regulations: These changes did, in fact, require evidence that single-sex education was necessary to
meet stated educational objectives for a school or district, was not based on stereotyping, and had outcomes that did meet the school’s original objectives.

Sherwin (2015) then documents the ongoing battle that has been waged to demonstrate to the Department of Education that many single-sex programs were not in compliance with even the 2006 regulatory change. She believes that the evidence provided to the courts that showed gender essentialist justifications were being used to launch single-sex programs may have been a motivating factor for the 2014 advisory issued by the U.S. Department of Education. The ruling rejected reliance on overly broad generalizations about gender differences, and likewise rejected assessments of program effectiveness that are not backed by scientific research showing the educational benefits. Thus, gender essentialist arguments used to defend single-sex schooling would presumably be rejected as a result of this recent ruling. Furthermore, the type of evidence required to demonstrate effectiveness ‘must compare single-sex with coed classes—attempting to account for confounding variables that could have led to changes in outcomes’ (Sherwin 2015, this issue). It is, of course, in those very comparisons that account for confounding variables that the evidence in favor of single-sex schooling either is greatly reduced or evaporates (e.g., Nagengast et al. 2013; Pahlke et al. 2014; Signorella et al. 2013).

Liben (2015) cautions that presenting evidence that contradicts the value of single-sex classes or that shows potential shortcomings is not likely to convince those whose conclusions are rooted in deeply held values about gender and human nature. Examples abound beyond the single-sex schooling arena, as Liben (2015) describes. Currently receiving attention (e.g., Dobbs 2015) is a book by historian Alice Dreger (2015), in which she described how her work on the history of medicine’s treatment of
those whose gender did not fit simple binary categories led to intense scientific disputes. Also in the news is a controversy over a religious freedom law in Indiana in the U. S. viewed as giving license to discriminate based on sexual orientation (e.g., Davey and Smith 2015). Beyond the gender arena are other examples of clashes between values or beliefs and empirical findings, such as over climate change (e.g., Mooney 2015).

To those on the side preferring traditional scientific data as the way in which debates can be resolved, it can be frustrating to see the same arguments recurring. In anticipation of the 2014 advisory by the U.S. Department of Education, the New York Times featured a dueling viewpoints article (Rich 2014), in which those arguing for or against single-sex education were quoted and given apparent equal weight. Many of those mentioned by Rich are cited in or have authored papers in this collection (including Bigler, Gurian, Hyde, Sax, and Sherwin). The article, however, gives much space to recounting the adoption of the types of gender-differentiated strategies that Liben (2015) critiques, including use of gender labeling that Liben shows can increase stereotyping (“‘Act pretty at all times!’ “ for girls; “‘Coaches Corner’ “ for boys; Rich 2014, para. 1–2).

Another major problem resides in the evidence cited in the article to show the supposed cognitive and behavioral advantages for students in the single-sex class offerings in Broward County, Florida, U.S. Although Rich (2014) observes correctly that “the theory that differences between boys and girls can affect how they learn and behave….is generally held in low regard by social scientists” (para. 4, 6), the article concludes by citing an evaluation that might appear to be appropriate evidence by social scientific standards. Rich (2014) reported that Metis Associates evaluated the Broward County classes and found that students in single-sex schools had fewer disciplinary
referrals and better test scores. A search of the Metis Associates website shows no references to the report (http://www.metisassoc.com), although Metis did post the link to the Rich (2014) article on their Facebook page (Metis Associates 2014).

The Metis report (Aulicino and Bergman, n.d.) can be found in the ACLU complaint filed against Broward County (Abudu et al. 2014; ACLU Florida 2014). The evidence provided, however, does not meet the standards outlined by the Department of Education 2014 advisory (Sherwin 2015). Only the students in the single-gender classes were assessed, and the comparisons were change scores from the previous year in a mixed-sex environment to the current year in the single-sex classes. As a result, there is no way to assess whether the single-sex nature of the classes or some other factor, such as parental motivation or historical change, could be responsible for any changes that might be observed in student outcomes. Even more interesting, however, is that in actuality, very few differences in student behaviors and test performance were observed from before versus after the change in classroom gender composition. The Rich (2014) article mentions some of the few differences found that seemed to favor the single-gender classes, but does not cite the other comparisons in the report that showed no differences or which showed an advantage to the previous year’s mixed-sex classes (see Aulicino and Bergman, n.d., pp. 28–32). Without a contemporary comparison to similar students in otherwise similar mixed-gender classes over time (e.g., see Signorella et al. 1996, for an example of this type of evaluation), none of the differences can be reasonably interpreted.

The third commentary by Huston (2015) provides a partial antidote to the frustrations for social scientists, as illustrated in the New York Times article. Huston (this issue) first acknowledges, “as Liben (2015) documents in detail, [that] the other
side seems to have won the publicity battles by producing books, websites, and other forms of media that are widely and readily accessible by parents and policymakers.” Huston also identifies the differences in the cultures of science and public policy and the different types of evidence valued in each. She argues, however, that “scientific evidence is most likely to be influential when it is high quality (e.g., it is replicated; findings are consistent; it uses state-of-the-art methods) and when ideological passions are relatively low” (Huston 2015, this issue). Huston also believes that there are demonstrably successful strategies for effectively conveying scientific evidence to policymakers.

Although Liben (2015) challenges us to think about the limitations of the impact of scientific evidence in the context of the broader culture of differing values, she also delivers a wealth of evidence that speaks to the lack of effectiveness and potentially detrimental consequences of single-sex education. She further provides throughout her commentary important directions for future research. One convergence of the scientific, legal, and policy arenas is the legal demand for evidence not only that gender makes a difference in learning but also that a single-gender setting is required for successful implementation of any educational strategy (Sherwin 2015). Can investigators in this field conduct the research that answers the legal requirements but also addresses the issues of values, public policies, and implementation in schools, many of which are struggling to educate their students? Liben (2015, this issue) closes by calling for more research but also for different research: “We need to explicitly identify the conceptions and values that underlie advocates’ and critics’ positions, and then confront their implications for research and practice.”

In addition to the suggestions made by the authors in this forum, scholars and researchers also need to be attentive to what may seem to be peripheral issues of
promoting and publicizing research. There are many new opportunities through social
media to connect research findings to new audiences, and thus professional
organizations, scientific publishers, and universities, as well an individual researchers,
are now making such links through Facebook, Twitter, and others. Dreger (2015)
cautions “If we take seriously the importance of truth to justice...then we really... must
do more to protect each other and the public from misinformation and disinformation”
(p. 261). A recent, widely discussed study showed that university press releases were
frequently guilty of overstatement and exaggeration of findings and their application
(33-40 % of the sampled releases), and those overstatements were then frequently
reported in traditional media outlets (Sumner et al. 2014). The credibility of researchers
in the public arena will depend not only on the quality of the work in traditional
scientific terms, but also on the ability to acknowledge differing viewpoints and values,
the recognition of the limitations of any findings, and the ability to communicate those
findings accurately and clearly to the public and policymakers.
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