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The Impact of the Variability Hypothesis on Margaret R. Washburn's and Mary W. Calkins' Paradoxical Relations with Faculty in their Graduate Programs

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This paper offers a possible explanation for the paradoxical relations for two of psychology's 19th century female pioneers with faculty members in their graduate programs: Margaret F. Washburn and James M. Cattell at Columbia University; and Mary W. Calkins and Hugo Munsterberg at Harvard University. Cattell's and Munsterberg's strong support and advocacy for these female graduate students appear contradictory to their general beliefs regarding women's intellectual capacities and pursuit of higher education. However, it is suggested that their views were, in fact, consistent with the variability hypothesis, which drew a sharp distinction between "average" and "exceptional" women. It is further suggested that Munsterberg's and Cattell's endorsement of the variability hypothesis may have increased their willingness to advocate equal educational opportunities for Calkins and Washburn.

Women entering psychology in the late 19th and early 20th centuries encountered societal prejudices and restrictions on their opportunities to pursue graduate education. Many psychologists (e.g., Cattell, 1909) believed that higher education for women would be detrimental to society and the human race because it would negatively impact a woman's ability or desire to bear children and to fulfill her presumed innate role as wife and mother. Such claims were often defended by pseudo-scientific research which attempted to demonstrate that the female mind and body were more frail than those of males. The presumed scientific basis for such claims provided a justification for existing societal prejudices

against women (Bohan, 1990) and led to a reluctance to permit even the brightest females to enter intellectual and scientific realms. Such biases were encountered by two pioneer women in psychology, Margaret F. Washburn and Mary W. Calkins.

Background

Contemporary scholarship (e.g., Bohan, 1990; Shields, 1975) has identified several obstacles that limited women's opportunities in higher education at the turn of the century. First, many of the prejudices concerning women in higher education were a reflection of the then widely accepted variability hypothesis. Influenced largely by Darwinism (Shields, 1975), the variability hypothesis claimed that the male

population exhibited a wider range of mental abilities than did the female population (Bohan, 1990; Thorndike, 1910). The theory suggested that, as a group, women deviate less from the median than do men. This suggested that although men dominated the highest extreme of the intellectual continuum, they dominated the lowest extreme of the population.

A second popularly held viewpoint at the turn of the century suggested that women had smaller brains than men (Bagehot, 1879; Bohan, 1990). Le Bon (1879, as cited in Tavris, 1992) suggested that, "in the most intelligent races... there are a large number of women whose brains are closer in size to those of gorillas than to the most developed male brains" (p. 44). Scientists reasoned that, because observable anatomical and physiological differences existed between males and females, the brain should be no exception (Shields, 1975).

Finally, prejudices concerning women in higher education were supported by the belief that women's reproductive organs would deteriorate if they used their brains excessively (Bohan, 1990). Many believed that women's bodies were particularly frail and that large amounts of mental activity would impose a harsh burden on the reproductive organs. Disregarding the arduous physical labor performed by most women during their domestic lives, it was argued that a woman should carefully avoid books and intellectual discourse if she desired to be fit enough to bear children. Although beliefs regarding the variability hypothesis, women's inferior brains, and the effect of mental activity on reproductive ability were eventually rejected, their widespread acceptance at the turn of the century presented significant obstacles for women who wished to pursue a graduate degree.

Several early psychologists were supportive of post-secondary education for women yet voiced strong opposition to coeducational opportunities (e.g., Hall, 1906, 1926; Munsterberg, 1901). According to G. Stanley Hall (1926), the crossing of male and female spheres was very dangerous. If women assumed male characteristics as a result of coeducational interaction, they were ignoring the very features that made them unique (e.g., domesticity, intuitiveness, morality, motherhood). He surmised that these qualities would be erased if women attempted to copy

male attributes such as problem-solving abilities, independence, and leadership. At the same time, many psychologists (e.g., Thorndike, 1906) agreed that women could, and should, be educated for occupations such as nursing and teaching because these tapped women's assumed innate nature to serve as nurturers and caregivers. Such influential views presented significant obstacles for women who wished to pursue a research degree in one of the sciences.

As women attempted to gain admission into graduate programs in experimental psychology, they were faced with discriminatory regulations from outstanding American universities such as Harvard and Columbia (Furumoto & Scarborough, 1986; Russo, 1983). The professors who taught in these prestigious institutions were then faced with the decision of whether to allow women into their lecture halls and laboratories. Although many of the male faculty members endorsed the variability hypothesis and other contemporary beliefs concerning the intellectual inferiority of women, some were none-the-less supportive of graduate education for women. This paper provides a possible explanation for how two 19th century women, Margaret F. Washburn and Mary W. Caikins, were able to earn the respect and support of two of their professors, James M. Cattell and Hugo Munsterberg, despite the fact that the beliefs of these men were consistent with the variability hypothesis.

Washburn and Cattell

Margaret Floy Washburn (1871-1939) was one of the first women in the United States to pursue a graduate degree in experimental psychology. After completing her undergraduate studies at Vassar College in 1891, Washburn entered Columbia University to study under James McKeen Cattell. Contrary to the anti-coeducational policy at Columbia, she was accepted on a conditional basis, as a "hearer" among her all male peers, rather than as a student (Stevens & Gardner, 1982). Washburn quickly became dissatisfied with the inequity of her status and thus, at the suggestion of Cattell, transferred in 1892 to Cornell University, which had a more liberal policy on coeducation (Stevens & Gardner, 1982). In 1894, while working at Cornell under the direction of E. B. Titchener, she became the first woman to be granted a Ph.D. in psychology by an American university (Stevens

& Gardner, 1982). During her career, she held such esteemed positions as President of the American Psychological Association, joint editor of the American Journal of Psychology, and Chair of the Psychology Department at Vassar College. In addition, she published over 200 articles and reviews and two books, including the famous Animal Mind (Stevens & Gardner, 1982; Zusne, 1984).

Washburn viewed her short-lived relationship with her first advisor, James McKeen Cattell, as supportive. Her admiration and respect for Cattell were demonstrated by her reference to him in her autobiography, "I feel an affectionate gratitude to him, as my first teacher, which in these later years I have courage to express; in earlier times I stood too much in awe of him" (Washburn, 1930/1961, p. 339). Although Cattell was associated with an institution that prohibited the admission of women, Washburn stated that he "treated me as a regular student and required of me all that he required of the men. A lifelong champion of freedom and equality of opportunity, it would never have occurred to him to reject a woman student on account of her sex" (Washburn, 1930/1961, p. 339). Interestingly, however, Cattell's published works revealed opinions about women in education that were not entirely consistent with Washburn's complimentary impression of him in a book that summarized his statistical study of one thousand eminent men throughout history. Cattell (1903) included 32 women, however, he minimized the importance of the women's contributions by asserting that he had "... spoken throughout of eminent men as we lack in English words including both men and women, but as a matter of fact women do not have an important place on the list" (Cattell, 1903, p. 375). He stated that 19 (i.e., 59%) of these women had achieved their status by means of heredity, misfortunes, beauty, and other circumstances, whereas fewer than 10% of the men on his list had achieved their eminent status in this manner. He noted that women generally have not excelled in art or poetry, which represent fields that are "least dependent on the environment" (p. 375), yet at the same time are those "in which the environment has been perhaps as favorable for women as for men" (p. 375).

To explain the underrepresentation of eminent women in his study, Cattell (1903)

alluded to the variability hypothesis. He asserted that, "Women depart less from the normal than man—a fact that usually holds for the female throughout the animal series. . . This distribution of women is represented by a narrower bell-shaped curve" (Cattell, 1903, p. 375). In a footnote, he then acknowledged that Karl Pearson, a well-known statistician, had subsequently questioned the validity of the lesser variability of women. Cattell conceded that "the matter can only be decided by the facts," and then concluded that his own "statistics certainly show greater variability for the male" (p. 375). Such statements suggest that Cattell's views were generally compatible with, or at least sympathetic to, the variability hypothesis.

Cattell's opinions concerning the education of women were consistent with those of many of his contemporaries. He claimed:

girls are injured more than boys by school life; they take it more seriously, and at certain times and at a certain age are far more subject to harm. It is probably not an exaggeration to say that to the average cost of each girl's education through the high school must be added one unborn child (Cattell, 1909, p. 91).

According to Cattell (1909), if educated women were to postpone or to eschew marriage and motherhood, both society and the human race would suffer. These women might develop interests that were divergent from those of their husbands, which would not be conducive to harmony within the family.

Despite Cattell's opinions regarding women's lesser variability and the dangers associated with higher education for women, he recognized Washburn's intellectual abilities and supported her pursuit of a graduate degree in experimental psychology. Evidence that Cattell held Washburn's contributions to psychology in very high regard is contained in his 1906 book which included the biographical sketches of over 4000 eminent men of science (Furumoto & Scarborough, 1986). Next to her name, Cattell (1906/1927) placed a star to denote that she was one of "the thousand students of the natural and exact sciences in the United States whose work is supposed to be the most important" (p. v). Although Cattell's generally negative opinions about higher education for women appear

paradoxical to his supportive stance toward Washburn, both are, in fact, congruent with the variability hypothesis. The variability hypothesis did not deny that some women were located on each end of the intelligence distribution, it merely suggested that the vast majority fell closer to the median. Thus, it is possible that Washburn's outstanding qualities led Cattell to perceive her as an "exception," who was qualitatively different from the "average" female to whom he referred throughout his writings. Viewing Washburn as an "exception" may have facilitated Cattell's supportive stance toward her, despite his generally negative stance regarding higher education for the majority of women. Thus, perhaps Washburn was correct in her impression that "it never would have occurred to Cattell to reject a woman student on account of her sex" (Washburn, 1930/1961, p. 339), so long as he perceived her to be "exceptional." A similar conclusion has been drawn regarding G. Stanley Hall's stance toward admitting a few select (i.e., exceptional) women as graduate students to Clark University (Diehl, 1986).

Calkins and Munsterberg

Mary W. Calkins (1863-1930) was another pioneer woman who pursued a graduate degree in experimental psychology at the turn of the century. Like Washburn, her contemporary, Calkins struggled to gain acceptance into a doctoral program in psychology. After receiving her undergraduate degree from Smith College in 1885, she obtained a faculty position teaching the classics at Wellesley College (Furumoto, 1979). She became interested in the new field of experimental psychology and wanted to pursue graduate study at the all-male Harvard University. Although she never was granted the opportunity to attend Harvard as a registered student due to its anti-coeducational policy, in 1890 she was granted permission to study as a "guest" of the university (Benjamin, 1993; Calkins, 1930/1961; Furumoto, 1979, 1980). While taking courses at Harvard, she remained a faculty member at Wellesley and established the first psychology laboratory at a woman's college (Furumoto, 1979). Calkins proved to be an outstanding and enthusiastic student at Harvard, winning the unyielding approval of Professors Hugo Munsterberg and William James. In 1895, Calkins presented her thesis to a panel of professors in the philosophy department, including Professors

Palmer, James, Royce, Munsterberg, Harris, and Santayana (Furumoto, 1980). They approved her thesis and, after conducting an informal and unauthorized Ph.D. examination, recommended that she be awarded the doctoral degree (Benjamin, 1993; Furumoto, 1979, 1980). However, the degree was not granted to this "guest" of the college, inevitably because she was a woman.

Despite the lack of a Harvard Ph.D., Calkins made many noteworthy contributions to psychology, including the publication of 105 articles and four books, establishment of the first psychology laboratory at Wellesley College, and the formulation of her paired association technique. She also held such honorable positions as the first female president of the American Psychological Association (14th overall) and the first female president of the American Philosophical Association (Benjamin, 1993; Furumoto, 1979; Scarborough & Furumoto, 1987; Stevens & Gardner, 1982).

Calkins described her relation with Munsterberg and her experience working in his laboratory as highly supportive. In her autobiography she stated:

I shall not let this opportunity pass by to record my gratitude for the friendly, comradely, and refreshingly matter-of-fact welcome which I received from the men working in the laboratory as assistants and students, by whom the unprecedented incursion of a woman might well have been resented (Calkins, 1930/1961, p. 33-34).

She expressed her "abiding gratitude to Dr. Munsterberg" who "swung the Laboratory doors open" to her and she described him as "a man of deep learning, high originality, and astounding versatility" (Calkins, 1930/1961, p. 33-34). As a faculty member and head of the philosophy department at Harvard, Munsterberg was forced to comply with institutional regulations prohibiting women as students. Despite this, he became a strong advocate for Calkins' educational pursuits. In an 1894 letter to Harvard's President and Fellows urging them to admit her as a candidate for the Ph.D., Munsterberg described Calkins as follows:

With regard to her ability, one may say that she is the strongest student of all who have worked in the laboratory in

these three years. Her publications and her work here do not let any doubt to me that she is superior also to all candidates of the philosophical Ph.D. during the last years. More than that: she is surely one of the strongest professors of psychology in this country . . . the Harvard Ph.D. attached to the name of Mary W. Calkins would mean not only a well deserved honor for her, but above all an honor for the philosophical department of Harvard University (as cited in Furumoto, 1979, p. 352).

Although Munsterberg's enthusiastic remarks regarding Calkins' performance and his advocacy for granting her the Ph.D. seem to imply his support for the higher education of women, his publications reveal that his opinions on this topic were complex. Throughout his career in both Germany and America, Munsterberg advocated for the higher education of women. Early in his career, he described himself as "heartily" joining "the ranks of those who fight for the rights of women for their higher education" (Munsterberg, 1901, p. 131). He stated, "I was proud that I—the first one in my German university to do so—had admitted women as regular students into my laboratory, years before I came to America" (p. 132). However, as his career progressed, Munsterberg came to believe that higher education for women in Germany served a different purpose than it did for women in America. He believed that higher education in Germany was almost wholly "of a character to make the young women better fitted for marriage" (p. 136), by deepening the intellectual comradeship between the husband and wife. He felt that German women would not choose intellectual pursuits as a substitute for marriage but, if necessary, would have them to fall back on as a "second best choice" (p. 138). In America, however, Munsterberg feared that higher learning would make marriage and domestic activity less attractive options to women. He preferred the German educational system because it served to "strengthen and reinforce the family idea" (p. 136), whereas the American educational system "militates against the home and against the masculine control of higher culture, and seems to me, therefore, antagonistic to the health of the nation" (p. 139).

Munsterberg (1901) claimed that a

fundamental difference between America and Germany was that:

...to the American mind the community is a multitude of individuals, to the German mind it is above all a unity. The American sees in the state an accumulation of elements of which each ought to be as perfect as possible; the German sees in it an organism in which each element ideally fulfills its role, only in so far as it adjusts itself to the welfare and perfection of the whole (p. 152).

He further stated that, "if it were really the goal of civilization to inspire the individuals that are now alive with as high aims as possible, the American system would be, at least with regard to the women, an ideal one..." (p. 153). He contended, however, that:

...the natural unity is the family. Every system of public spirit which in its final outcome raises the individuals, but lowers the families, is antagonistic to the true civilization of the people. . . No one will dare say to a woman, This is the best, but you, for one, ought to be satisfied with the second best. But we have the right to demand from the community that the woman be taught to consider, as the really best for her, what is in the highest interests of the whole of society, even if it be second best for the individual (p. 154).

Thus, Munsterberg made clear his position that the ultimate purpose of higher education for women should be to improve the quality of the family and home life rather than to raise the quality of life for the woman as an individual.

In addition to fearing its negative effects on the family, Munsterberg also expressed grave concern that higher education of women in America would lead to an "effeminization" of public life and higher culture. He claimed that throughout German history:

Man sets the standard in every public discussion, for politics and civil life, for science and scholarship, for education and religion, for law and medicine, for commerce and industry, and even for art and literature. Women are faithful helpers there in some lines... but the landmarks for every development are set

by men, and all this will outlast even the most energetic movements for the higher education of woman, unless the whole structure of German ideals becomes disorganized (p. 138).

In his discussion concerning the possibility that women in America would be entrusted with primary responsibility for guiding the direction of national culture (e.g., art, literature, education, science, morality and religion), Munsterberg's (1901) opinions regarding the intellectual nature of women were clearly revealed:

In the female mind the contents of consciousness have the tendency to fuse into a unity, while they remain separated in the man's mind. Both tendencies have their merits and their defects; but, above all, they are different, and make women superior in some functions, and man superior in some others. The immediate outcome of that feminine mental type is woman's tact and aesthetic feeling, her instinctive insight, her enthusiasm, her sympathy, her natural wisdom and morality; but, on the other side, also her lack of clearness and logical consistency, her tendency to hasty generalization, her mixing of principles, her undervaluation of the abstract and of the absent, her lack of deliberation, her readiness to follow her feelings and emotions. Even these defects can beautify the private life, can make our social surrounds attractive, and soften and complete the strenuous, earnest, and consistent public activity of the man; but they do not give the power to meet these public duties without man's harder logic. If the whole national civilization should receive the feminine stamp, it would become powerless and without decisive influence on the world's progress (p. 159).

Like many of his contemporaries, Munsterberg (1901) strongly opposed coeducation because of his belief that the intellectual abilities of women were generally inferior to those of men and thus, would lower the standard of scholarly work. Although he acknowledged that the average male and female student performed equally well, he suggested that because women were more studious, they were thus able to balance "certain

undeniable shortcomings" (p. 161). He further concluded that differences between male and female students appeared to be small because the American university system had adopted a "feminine attitude towards scholarship," one that emphasized "a passive, receptive, uncritical attitude toward knowledge." Although he described American universities as "excellent places for the distribution of knowledge," he claimed that they had not been developed as places of research and were "little prepared to advance the knowledge of the world" (p. 162). He indicated that with few exceptions, women's intellectual abilities would not equal men's ability to do research. Thus, when referring to the admission policies of American universities, Munsterberg (1901) proposed:

...the equality of the two sexes must disappear in them, - the more must they become, like European institutions, places for men, where only the exceptional women of special talent can be welcomed, while the average woman must attend the woman's college with its receptive scholarship (p. 1163).

The above passage illustrates that Munsterberg drew a clear distinction between what he considered to be the "average" and the "exceptional" woman. Munsterberg acknowledged that the intellectual abilities of some of the most talented women were "of the highest scholarship" (p. 136) and were equal to those of men, but he warned that:

...genius must always be treated as an exception, and exceptions have existed at all times. The few who take the doctor's degree, and who feel the mission for productive work in scholarship, can thus be set aside in the discussion, while the situation as a whole suggests most clearly the irregularity of such a vocation, and does not push the average woman into such a path (p. 136).

Describing the many women who had completed their graduate work under his direction, Munsterberg (1913) proclaimed, "I hardly think they can be equaled" (p. 149). He then described the contributions of Calkins as having made "a decided impression on the development of psychology" (p. 149). The

discrepancy between Munsterberg's opinion of Mary W. Calkins and his opinion regarding the "average" woman is striking. His strong support and advocacy for Calkins clearly suggest that he judged her to be "exceptional".

It is noteworthy that Calkins and Munsterberg held one another in such high esteem despite their philosophical disagreements. Munsterberg claimed that the interests and abilities of men and women were "inherently" different. Calkins challenged this assertion by pointing out the difficulty of determining whether such differences could be attributed to inherent or environmental factors. Commenting on a paper in which sex differences were examined, Calkins (1896) asserted that it was "futile and impossible" to "attempt a distinction between masculine and feminine intellect per se. . . because of our entire inability to eliminate the effect of the environment" (p. 430). The "differences in the training and tradition of men and women begin with the earliest months of infancy and continue through life" (p. 430). She indicated that although statistical studies could identify differences in the interests of men and women, they could not rule out the possibility that these differences were the result of "cultivated interests" rather than inherent sex differences as Munsterberg had suggested.

Munsterberg and Calkins also expressed philosophical differences concerning the issue of coeducation. Interestingly, although Munsterberg (1913) strongly argued against coeducation in high school and college, he ardently supported it at the graduate level. He believed that the purpose of high school and college was to provide a "cultural" education. Therefore, Munsterberg advocated for "bieducation," which called for "a special education for men and a special education for women adapted to their needs" (p. 151). However, he suggested that since graduate education is geared toward "vocational" interests, "as soon as professional work begins, all separation of the sexes would be meaningless and undesirable" (p. 152). Calkins (1915, as cited in Furumoto, 1980) strongly opposed Munsterberg's position regarding coeducation during the college years as evidenced by her claim that:

...advocating a distinctive curriculum for a woman's college is much like advocating a distinctive dietary.

However strongly we emphasize the difference in the outlook of the girl from that of the youth we never think of suggesting that she should be fed on sweets and starchy foods, he on fruits and meats. We recognize that the human body (a woman's like a man's) needs for its greatest efficiency in any direction certain amounts of carbohydrates, of proteids (sic), and the like. Should we not realize, similarly, that the human mind (a woman's like a man's) needs, if it is with highest skill to solve its problems—professional, commercial, or domestic—training in certain basal disciplines? Is it not, in a word, as futile to differentiate feminine from masculine studies as to distinguish between women's and men's foods (p. 65)?

Despite their opposing opinions concerning inherent differences between men and women and the desirability of coeducation, Calkins and Munsterberg shared some traditional opinions regarding the role of women in the family. Although she considered herself a suffragist, Calkins denied that she was a feminist, stating "Wherein feminism makes encroachments into the institution of the family, I cannot follow it" (as cited in Scarborough & Furumoto, 1987, p. 43). She agreed with Munsterberg that marriage should take precedence over a career as evidenced through her proclamation that "one should pity and condemn the woman (if there could be such a woman) who turned aside from marriage with a good man whose love she returned in order to pursue any end of the scholar" (as cited in Scarborough & Furumoto, 1987, p. 43). Given that Calkins herself never married, Scarborough and Furumoto (1987) surmised that she was never in the position in which she had to choose between a desirable marriage proposal and her professional career. Yet, Calkins also never allowed her career to interfere with her fulfilling the traditional role of daughter. Her brother described her in the following way, "Her family interests were deep and intense. Her devotion to her parents was unspeakably beautiful, and her mother was her inseparable companion. Nothing ever interfered with her devoted care of those whom she loved supremely" (Calkins, 1931, p. 14). The opinions

that Calkins and Munsterberg shared regarding the role of women in the family may have contributed to their strong professional relationship.

Conclusion

Margaret F. Washburn and Mary W. Calkins were truly exceptional women in psychology. Their determination, ability, and persistent pursuit of advanced degrees in psychology in the face of prevailing prejudice against graduate education for women marked them as true pioneers. Their subsequent contributions to psychology demonstrated that women could excel in scholarly and scientific realms. Cattell and Munsterberg recognized that Washburn and Calkins exhibited exceptional abilities comparable to those of the most talented men. Yet, their belief in the variability hypothesis also led them to judge their students as "exceptional" in a second sense, as two statistically rare women whose intellect deviated from the average and fell in the intellectually superior range.

The presumed scientific basis of the variability hypothesis provided justification for the restricted educational and occupational opportunities available to women at the turn of the century. Ironically, however, endorsement of the variability hypothesis by eminent psychologists such as Munsterberg and Cattell may have increased opportunities available to a small minority of women such as Washburn and Calkins. Although many of psychology's influential thinkers were opposed to advanced educational opportunities for the "average" woman, endorsement of the variability hypothesis led them to acknowledge that the intellectual abilities of a small minority of women were equal to those of the most intelligent men. For the few women who were deemed to be intellectually superior, there was little scientific justification to prevent them from pursuing a graduate degree. Because Calkins and Washburn were judged to be "exceptional," Munsterberg and Cattell could advocate for equal opportunities for these women without challenging the status quo or compromising their general opposition to advanced educational opportunities for the "average" woman.

The support and advocacy that Calkins and Washburn received from Munsterberg and Cattell facilitated their opportunity to obtain a graduate education in experimental psychology.

As two of the first American women to be granted this privilege, each proved that a woman could excel in a doctoral program and make significant contributions to psychology. The success of Calkins and Washburn however, did little to refute the variability hypothesis or to improve the opportunities available to the "average" woman. As long as they were judged to be "exceptional," there was no reason to question the variability hypothesis or to advocate that similar educational opportunities should be made available to all women. It was other pioneer women, such as Leta Stetter Hollingworth and Helen Thompson Wooley, who followed in Washburn's and Calkin's footsteps, and provided empirical evidence (e.g., Hollingworth, 1914; Thompson, 1903) that contributed to the eventual rejection of the variability hypothesis.

References

- Bagehot, W. (1879). Biology and "women's rights". *Popular Science Monthly*, 14, 201-213.
- Benjamin, L. T. (1993). *A history of psychology in letters*. Dubuque, IA: Brown & Benchmark.
- Bohan, J. S. (1990). Contextual history: A framework for re-placing women in the history of psychology. *Psychology of Women Quarterly*, 14, 213-228.
- Calkins, M. W. (1896). Community of ideas of men and women. *Psychological Review*, 3, 426-431.
- Calkins, R. (1931). "Mary Whiton Calkins." in *in Memoriam: Mary Whiton Calkins 1863-1930* (pp. 1-19). Boston: Menymount Press.
- Calkins, M. W. (1961). Mary Whiton Calkins. In C. Marchinson (Ed.), *A history of psychology in autobiography*: Vol. 1. (pp. 31-62). New York: Russell & Russell. (Original work published 1930).
- Cattell, J. M. (1903). A statistical study of eminent men. *Popular Science Monthly*, 62, 359-377.
- Cattell, J. M. (1909). The school and the family. *Popular Science Monthly*, 74, 84-95.
- Cattell, J. M. (Ed.). (1906/1927). *American men of science: A biographical directory*. New York: Science Press.

- Diehl, L. A. (1986). The paradox of G. Stanley Hall: Foe of coeducation and educator of women. *American Psychologist*, 41, 868-878.
- Furumoto, L. (1979). Mary Whiton Calkins (1863-1930): Fourteenth president of the American Psychological Association. *Journal of the History of the Behavioral Sciences*, 15, 346-356.
- Furumoto, L. (1980). Mary Whiton Calkins (1863-1930). *Psychology of Women Quarterly*, 5, 55-68.
- Furumoto, L., & Scarborough, E. (1986). Placing women in the history of psychology: The first American women psychologists. In J. S. Bohan (Ed.), *Re-Placing women in psychology: Readings toward a more inclusive history* (pp. 71-83). Dubuque, IA: Kendall/Hunt Publishing.
- Hall, G. S. (1906). The question of coeducation. *Munsey's Magazine*, 34, 588-592.
- Hall, G. S. (1926). *Youth: its education, regimen, and hygiene*. New York: D. Appleton & Co.
- Hollingsworth, L. S. (1914). Variability as related to sex differences in achievement. *American Journal of Sociology*, 19, 510-530.
- Munsterberg, H. (1901). *American traits: From the point of view of a German*. Cambridge, MA: Riverside Press.
- Munsterberg, H. (1913). *American patriotism and other social studies*. New York: Moffat, Yard and Company.
- Russo, N. F. (1983). Psychology's foremothers: Their achievements in context. In A. N. O'Connell, & N. F. Russo (Eds.), *Models of achievement: Reflections of eminent women in psychology* (pp. 9-24). New York: Columbia University Press.
- Scarborough, E., & Furumoto, L. (1987). *Untold lives: The first generation of American women psychologists*. New York: Columbia University Press.
- Shields, S. A. (1975). Functionalism, Darwinism, and the psychology of women. *American Psychologist*, 30, 739-754.
- Stevens, G., & Gardner, S. (1982). *The women of psychology*. Cambridge, MA: Cambridge University Press.
- Tavris, C. (1992). *The mismeasure of woman*. New York: Simon & Schuster.
- Thorndike, E. L. (1906). Sex in education. *Bookman*, 23, 211-214.
- Thorndike, E. L. (1910). *Educational psychology* (2nd ed.). New York: Teacher's College, Columbia University.
- Thompson, H. B. (1903). *The mental traits of sex*. Chicago: University of Chicago Press.
- Washburn, M. F. (1961). Some reflections. In C. Murchison (Ed.), *A history of psychology in autobiography: Vol. 2*. (pp. 333-358). New York: Russell & Russell. (Original work published 1930)
- Zusne, L. (1984). *Biographical dictionary of psychology*. Westport, CT: Greenwood Press.