

# “Why Are There So Many Women in Forensic Anthropology?”: An Evaluation of Gendered Experiences in Forensic Anthropology

Marin A. Pilloud<sup>a</sup> • Nicholas V. Passalacqua<sup>b</sup>

**ABSTRACT:** There is broad discussion of the higher numbers of women in the forensic sciences, particularly when compared to other science, technology, engineering, and math (STEM) fields. In this discussion, we focus on forensic anthropology. We begin with an historical overview of the role of women in the discipline; data are then provided that outline the numbers of women scholars and practitioners over time. We then explore the different roles of men and women in regard to leadership positions, professional awards, awarded grant-funding, job hiring trends, presentations at the American Academy of Forensic Sciences (AAFS) annual meeting, and publications in the *Journal of Forensic Sciences*. While the number of women in forensic anthropology is greatly increasing, the discipline has been slow to also grow the visibility of women in positions of leadership or to honor them with prestigious awards. One reason for this finding may be that women are subjected to bias and harassment, which may cause them to leave forensic anthropology at various points along the way, or lead to their contribution being less valued. These findings are discussed within the context of gendered expectations, and suggestions are provided on how to improve the retention of women as well as to diversify the discipline in general.

**KEYWORDS:** gender equality, sexual discrimination, sexual harassment, gendered expectations

The question posed in this title is one that most women forensic anthropologists have certainly heard at some point in their career. It is frequently asked rhetorically during business meetings of the Anthropology Section of the American Academy of Forensic Sciences (AAFS). Presumably, the question stems from a lack of women in other science, technology, engineering, and math (STEM) fields compared to the growing number of women in forensic anthropology (and the associated shrinking number of men in forensic anthropology). For example, male enrollment in college has steadily declined over the past several decades, from 71% in 1947 to 43% of enrollees in 2005 (Conger and Long 2010). As a result, since the late 1990s, the majority of degrees given by colleges and universities have been awarded to women (Perna 2005). In the academic year 2016–2017, in the United States, women earned 60.8% of associate’s degrees, 57.3% of bachelor’s degrees, 59.4% of master’s degrees, and 53.3% of doctoral degrees (National Center for Education Statistics 2018).

Currently, women earn about half of the science (which may or may not include anthropology, depending on the university) and engineering bachelor’s degrees, and they comprise half of the workforce in the United States. However, men occupy nearly three-quarters of the positions in STEM disciplines (Beede et al. 2011; Houck 2009; NSF 2017). While there are *seemingly* more women than men in forensic anthropology, there has been little data or systematic investigation to support this anecdotal finding. Here we investigate the actual numbers of women in the discipline through various measures. We also explore the different roles of men and women in regard to leadership positions, professional awards, awarded grant funding, hiring trends, presentations at the annual meeting of the AAFS, and publications in the *Journal of Forensic Sciences*. We conclude with a discussion of our findings and provide various solutions to improve gender equity as well as to diversify the discipline.

## A Brief Historical Overview of Women in Forensic Anthropology

To understand the current status of gender equity, it is worth considering the history of women in the discipline. As Powell et al. (2006) pointed out, in Spencer’s (1997) volume on the history of physical anthropology, there are 304 name entries, only eight of which are women. Here we focus predominantly on those women who had a role in the formation of forensic anthropology, which encompasses the majority of the twentieth century. We also introduce contextual

<sup>a</sup>Department of Anthropology, University of Nevada, Reno, NV 89557, USA

<sup>b</sup>Department of Anthropology and Sociology, Western Carolina University, Cullowhee, NC 28723, USA

\*Correspondence to: Marin A. Pilloud, Department of Anthropology, University of Nevada, Reno, 1664 North Virginia St., Reno, NV 89557  
E-mail: mpilloud@unr.edu

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information that helps shape the discussion of how women were treated in the discipline at roughly the same time.

As Thomas Dwight is largely considered the “*father of forensic anthropology in the United States*” (Stewart 1979:xii), Mildred Trotter (1899–1991) is equally deserving of the title the *mother of forensic anthropology in the United States*.<sup>1</sup> Her influence and major accomplishments in the discipline are well known to forensic anthropologists. Although she studied hair early in her career (Trotter 1924; 1930; 1939), Professor Trotter later turned to anatomy and earned her PhD at the Washington University School of Medicine in 1924 under the direction of Robert J. Terry (Powell et al. 2006). Soon after, she took a position at that same institution. In 1946, she was promoted to full professor, the first woman to hold that title at her institution. Two years later, she took an unpaid leave of absence to oversee the identification of remains from the Pacific theater of World War II as the director of the Central Identification Laboratory at Schofield Barracks in Hawai‘i (Conroy et al. 1992). While her research interests were quite varied, she is well known for her papers on stature estimation (e.g., Trotter and Gleser 1951a; Trotter and Gleser 1951b; Trotter and Gleser 1952; 1958).

Professor Trotter holds an impressive list of “firsts” in biological and forensic anthropology. She was one of two women founding members of the American Association of Physical Anthropologists (AAPA) and served as the first woman president of the AAPA from 1955 to 1957 (Wilson 2019). She was the first (and only) woman to receive the Viking Fund Medal awarded by the Wenner-Gren Foundation in physical anthropology (Conroy et al. 1992). She was also the first woman to win the T. Dale Stewart Award in 1982, given by the Physical Anthropology Section of the AAFS for “outstanding contributions to the field of forensic physical anthropology.”<sup>2</sup>

Given this background, and her work in the profession throughout the early to late 1900s, Professor Trotter was no stranger to sexism. In a candid interview from 1972, as part of the Washington University School of Medicine Oral History Project, Professor Trotter discussed her life and was quite open about the sexism she faced. She discussed her differential treatment and lower pay throughout her studies and career when compared to men. For example, when she

took leave from Washington University to oversee the Central Identification Laboratory, she left a full academic year without pay. Despite her recommendations that they hire a woman to replace her, they hired a man for six months and paid him her full year’s salary. These experiences helped shape her interest in “women’s lib” (as she called it in her 1972 interview). When speaking about equal opportunities for women in the sciences, and in general, she was quoted as saying, “I was and I remain optimistic. But it’s a great struggle that we must keep on with” (Trotter 1972).

Arguably, the first woman to receive a PhD in the United States with a specialization in physical anthropology was Charlotte Day Gower (1902–1982). She received her PhD in 1928 at the University of Chicago; her dissertation was titled, “*The Supernatural Patron in Sicilian Life*.” She was an assistant professor at the University of Wisconsin and later went on to be an analyst for the Central Intelligence Agency (Bernstein 2002). While her dissertation was an ethnography, what is of relevance here is her early work on nasal aperture shape (Gower 1923). While this paper, and its scoring system, have been cited in subsequent works (e.g., Arsuaga et al. 1999; Churchill et al. 2004; Franciscus 2003; Mccollum 2000), Powell et al. (2006) argue that this work was largely overlooked because it was critical of the concept of racial classification.

In the United States, the first doctoral dissertation focusing on biological anthropology by a woman was completed by Ruth Otis Sawtell (Ruth Sawtell Wallis; 1895–1978) at Columbia University in 1929. Her dissertation was entitled, “*Ossification and Growth of Children from One to Eight Years of Age*” (Bernstein 2002). She completed her MA, studying with E. A. Hooton, and later worked with Franz Boas to complete her PhD (Powell et al. 2006). While Franz Boas is exceptional in the large number of women he mentored, his attitude toward women students were not always favorable. In written correspondence with his mother in 1900, Boas lamented the large number of women in his undergraduate courses, writing, “My introductory course this year is overrun with women students. I wish I could get rid of some of them and exchange them for men, not because I have anything against women, but because men students simply will not come into the course” (Cole and Boas 1992:3). His mother was dismayed by this comment, and in a subsequent letter he clarified his statement by saying, “On the whole, one does not get as much from the girls (Mädchen) as from the young men (Männer), who have greater independence of thought than the girls” (Cole and Boas 1992:3).

Dr. Sawtell, along with Mildred Trotter, was one of the two founding women members of the AAPA (Wilson 2019). She took an academic position in 1930 at the University of Iowa. The following year she married a prominent cultural anthropologist, Wilson D. Wallis. She then followed her husband as he took a position at the University of Minnesota (Collins 1979). She initially found work at Hamline University but was let go in 1935. Her dismissal from this

1. While certainly deserving of a title of praise, we were hesitant to use the term “mother” here to describe Trotter’s monumental contribution to forensic anthropology. Such a term has broader connotations of nurturing that go beyond what is intended when the term “father” is used (in which it is understood as a creator of something). The term “mother” also fosters maternalization of women in the field, which we were hoping to avoid (as discussed later). We considered alternate terms such as: Madame, dame, matron; yet, none seemed to overcome these issues or seemed comparable to father. Therefore, we use “mother” in an attempt to reclaim the term and juxtapose it with that of “father”; although, we use it with some reservation.

2. From <https://news.aafs.org/section-news/the-t-dale-stewart-award-nominations-are-due-january-1/>. Retrieved October 2019.

position was largely in response to lack of funding due to the Great Depression as well as attitudes toward married women in academia at that time (Case 1988). She then had a long lapse in her career during which she collaborated with her husband and wrote mystery novels, many of which focused on anthropology. In 1956, her husband retired and she took a position at Annhurst College, where she worked until her retirement in 1974 (Collins 1979). While she managed to reclaim her career later in life, it was clear that her academic ambitions were sacrificed in favor of those of her husband.

Caroline Bond Day (1889–1948) was the first black woman to earn a graduate degree in biological anthropology. Prior to her graduate studies, Day earned two bachelor's degrees. The first was at Atlanta University where she worked with W. E. B. DuBois (Curwood 2010; Wilson 2019), a social scientist who was considered the “leading African American educator of his time” (Johnson 2000:77). The second was at Radcliff in 1919, where her interest in biological anthropology began to develop. In 1932, Day completed her master's thesis under the direction of Earnest Hooton at Harvard titled, *A Study of Some Negro-White Families in the United States*. While Day collected the data for this ambitious project, Hooton and colleagues oversaw much of the analysis of the anthropometric data. Subsequent to her studies, Day found it difficult to publish her work or secure an academic position largely due to racism and sexism (Curwood 2010).

Alice Mossie Brues (1913–2007) completed her PhD in physical anthropology at Harvard in 1940, the second woman in the United States to earn a PhD in this discipline (Dufour 2007). As a woman, she was not allowed to sit in the lecture hall, and instead would listen from the hall (Dufour 2007). In fact, her father, a professor of entomology at Harvard, had to persuade Hooton to allow her to sit in on his class (Hefner 2007). Professor Brues began her career working as a research associate at the Peabody Museum at Harvard, followed by a stint as a statistician with the United States Air Force. She later moved to the University of Oklahoma as an assistant professor of anatomy. After nearly 20 years, she took a position in 1965 at the University of Colorado, Boulder having been recruited to join their faculty. She stayed at this university until her retirement in 1984 (Dufour 2007).

Notably, in her career, Dr. Brues was the second woman to hold the office as president of the AAPA (1971–1973), after Mildred Trotter. She can also be regarded as one of the founding scholars of forensic anthropology. Not only did she form strong ties throughout her career with law enforcement agencies (Powell et al. 2006), she also wrote a formative paper on the identification of skeletal remains for law enforcement (Brues 1958). She was the recipient of the T. Dale Stewart Award in 1986, again the second woman to receive the award after Mildred Trotter. She, along with two others, was the recipient of the inaugural Charles R. Darwin Lifetime Achievement Award given by the AAPA in 1992

(Sandford et al. 2012). She was also active in the Mountain, Desert, and Coastal Forensic Anthropologists annual meeting; the organization now has a student research award named in her honor.

In 1977, the first year that forensic anthropologists could become certified by the American Board of Forensic Anthropology (ABFA), no woman received the title. The following year, four women, Sheilagh Brooks (Diplomate #10), Jane Buikstra (Diplomate #11), Louise Robbins (Diplomate #19), and Judy Suchey (Diplomate #22) became Diplomates. Their accomplishments and careers are briefly outlined below.

Sheilagh Thompson Brooks (1923–2008) was the first woman to earn a PhD in physical anthropology from the University of California (UC), Berkeley in 1951. Her dissertation was titled, “*A Comparison of the Criteria of Age Determination of Human Skeletons by Cranial and Pelvic Morphology*” under the direction of Theodore McCown (Powell et al. 2006). This was an area of research that would figure prominently in her career (e.g., Brooks and Suchey 1990; Brooks 1955). Professor Brooks worked at UC Berkeley in the paleontology museum (1953) and in the physiology department (1958–1963). She later went to the University of Colorado, Boulder from 1963–1966. After working in Colorado, she became the first full-time anthropologist at the University of Nevada, Las Vegas (UNLV) (Powell et al. 2006), where she finished her career.

In 1985, she was given the UNLV Distinguished Faculty Award; two years later she was the first to receive the title of Distinguished Professor at the university. In 1994, Professor Brooks was awarded the T. Dale Stewart Award, the third woman to receive the prestigious award. In honor of her legacy at UNLV, the Osteology Research Laboratory there bears her name. Additionally, the Mountain, Desert, and Coastal Forensic Anthropologists have a student travel award named in her honor.

Jane E. Buikstra (1945–)<sup>3</sup> is well known for her pioneering work in bioarchaeology and her involvement in shaping forensic anthropology. She received her PhD in anthropology from the University of Chicago in 1972 under the direction of Charles Merbs. From 1970 to 1986, she taught at Northwestern University. In 1986, she was hired as a professor at the University of Chicago, where she stayed until 1995. Later, she moved to the University of New Mexico, where she served as a professor for the next 10 years. In 2005, she took a position at Arizona State University where she currently holds a Regents Professor of bioarchaeology and served as the inaugural director of the Center for Bioarchaeological Research.

In 1987, she was elected to the National Academy of Sciences, the only woman elected that year. In 2008, she

3. Most of this discussion is based on the curriculum vitae of Professor Buikstra found online here: <https://isearch.asu.edu/profile/850651/cv>. Accessed October 2019, on her updated 2019 CV, and on comments she generously provided to us for this manuscript.

was honored with the T. Dale Stewart Award and the Charles R. Darwin Lifetime Achievement Award. She has also been awarded the Eve Cockburn Award for Service from the Paleopathology Association (2011), the Lloyd Cotsen Prize for Lifetime Achievement in World Archaeology (2016), and the Aleš Hrdlička Memorial Medal from the Anthropology Society of the Czech Republic (2019).

Dr. Buikstra has served as the president of the American Anthropological Association (1989–1991), the AAPA (1985–1987), and the Paleopathology Association (2003–2005), and as a member of the board of directors of the ABFA (1998–2003). She has been on the editorial board of *HOMO*, *Chungará*, *International Journal of Osteoarchaeology*, *Journal of Anthropological Archaeology*, *Journal of Anthropological Research*, *Journal of Forensic Sciences*, and *Evolutionary Anthropology*, and she was the inaugural editor of the *International Journal of Paleopathology*. She is indefatigably active as a biological anthropologist, as evident from her over 150 articles and chapters, and over a dozen edited or authored volumes (Rakita 2013), including several influential publications (e.g., Buikstra 1977; Buikstra and Ubelaker 1994; Buikstra and Beck 2006). Beyond publications, editorial experience, and service, her influence and legacy are great having advised over 55 PhD graduate students.

Louise M. Robbins (1928–1987) received her PhD in 1968 at Indiana University under the direction of George K. Neumann (Brooks 1988). In 1965, she took a position at the University of Kentucky. She later held a position at Mississippi State University before moving to the University of North Carolina, Greensboro in 1974 (Powell et al. 2006). Much of her work was focused on bioarchaeology quite broadly (e.g., Robbins 1971; Robbins 1978b), and she was an early proponent of the integration of archaeological fieldwork and skeletal analysis. However, she is most well known for her work on footprints, not only in forensic cases but also at Laetoli (Brooks 1988). This work was quite prolific (e.g., Robbins 1978a; Robbins and Gantt 1985); she even developed formulae to estimate height and weight from footprints (Robbins 1986). Based on this research, she testified as an expert witness in more than 20 criminal trials in the United States and Canada. In these cases, she claimed she could positively identify shoe or footprints placing individuals at crime scenes; however, much of her work on this type of forensic foot and shoe print analysis has been discredited (Hansen 1993; White et al. 2011).

Judy Myers Suchey (1943–) received her PhD in 1975 from UC Riverside under the direction of Alan Fix. Her dissertation was entitled, “*Biological Distance Analysis of Prehistoric Central California Populations Derived from Non-Metric Traits of the Cranium*.” She earned her B.A. and M.A. from the University of Kansas, where she studied under William Bass, whom she credits for her knowledge of osteology (Suchey 1976). Professor Suchey spent most of her career working at California State University, Fullerton, performing casework as a consultant with multiple counties,

including the Los Angeles Coroner’s Office. During this time, she worked on several high-profile cases, including the Manson Family murder investigation (Granberry 1994). She is best known for her work on aging the pubic symphysis along with Sheilagh Brooks (e.g., Brooks and Suchey 1990; Suchey 1979; Suchey 1980). In 2006, she was given the T. Dale Stewart Award (the third woman to earn this achievement) and is still one of only nine women to have received the award between 1980 and 2020. Much like Alice Brues and Sheilagh Brooks, Professor Suchey was also active in the Mountain, Desert, and Coastal Forensic Anthropologists’ annual meeting. In a 1994 Los Angeles Times article about her work, when asked why she worked as a forensic anthropologist, her response was, “It’s such a great feeling, feeling useful and needed, especially if my work helps get to the bottom of an unsolved homicide. Like most people, if I solve a problem or really help someone, it makes me feel good, as though, ‘Hey, here’s something I do that really matters’” (Granberry 1994).

While these four women were the first to receive certification by the ABFA, additional women were slow to join their ranks. By 1985, only 17.1 % (6/35) of ABFA Diplomates were women. It was also around this time that William Bass published the third edition of his book, *Human Osteology: A Field and Laboratory Manual* (Bass 1987), originally published in 1971. In this third edition, when discussing sexual dimorphism of the pelvis, Bass (1987:200) stated:

“By the time an individual has reached the level of academic achievement that he is able to read this manual, he already has observed that the female has a broader pelvis (hips) than the male. This can be observed especially during the spring and summer when coats have been replaced by more tight-fitting apparel. The greater width is due to changes throughout the female pelvis.”

By the next edition, nearly a decade later, Bass (1995:208) had removed the reference to “tight-fitting apparel”, such that the section read:

“By the time an individual has reached the level of academic achievement that he is able to read this manual, he already has observed that the female has a broader pelvis (hips) than the male. This greater width is due to changes throughout the female pelvis.”

While some may argue a statement like this was simply commonplace at the time, the blatant sexism in the earlier volume is remarkable. This statement certainly served as a signal to women studying osteology and reading this book that they were not considered part of the analytical side of forensic anthropology but were rather to be objectified and “observed.” Further, it is of note that the pronoun “he” is still used in the 1995 edition to describe the practitioner who has observed larger hips in females. While reference to “tight-fitting apparel” has been removed, the intimation that men are the observant analysts remains.

The first year that women outnumbered men in becoming certified by the ABFA was in 1997, with three women

and two men passing the examination. As we will discuss further below, however, it was not until around the year 2000 that the number of women and men Diplomates in the ABFA reached some parity. Here we list the name and Diplomate number of women who achieved ABFA certification up until the year 2000, considering them the early shapers of forensic anthropology (historic list from the ABFA website, theabfa.org):

- 1980: Linda L. Klepinger (#26)
- 1983: Marcella H. Sorg (#32)
- 1986: Kathleen J. Reichs (#36)
- 1988: Madeleine J. Hinkes (#38)
- 1989: Diane J. France (#41)
- 1994: Allison Galloway (#45)
- 1995: Kim Schneider (#48)
- 1997: Leslie E. Eisenberg (#53), Lisa Leppo (#54), and Tal Simmons (#56)
- 1999: Elizabeth A. Murray (#59)
- 2000: Ann Webster Bunch (#60)

**Women in Forensic Anthropology**

While attention is constantly drawn to the number of women pursuing education and training in and/or practicing forensic anthropology, there is little data to investigate

the relative changes over time in the gender of individuals in the discipline. The authors recently addressed this issue and demonstrated that females greatly outnumber males in membership within the Anthropology Section of the AAFS (Passalacqua and Pilloud 2018). As of 2017, 72.6% (372/512) of members of the Anthropology Section of the AAFS identified as women. This gender disparity is particularly evident in the student and trainee affiliate categories, where women outnumber men 9:1 and 22:1, respectively (Figure 1).

In terms of certification in the ABFA, as briefly mentioned above, there has been a clear trend of increasing numbers of women since around the year 2000 (Figure 2). In 2020, 12 women became ABFA-certified, the largest number to ever do so in a single year. With this latest round of new diplomates, 146 people have become certified by the ABFA. Of these 146, exactly half are men (n = 73) and half are women (n = 73). Certainly, if the current trend continues, more women will be diplomates of the ABFA beginning in 2021. We also evaluated the number of active ABFA diplomates, as over the past 40+ years (i.e., since 1977 when board certification began), some diplomates have retired or passed away. Of active diplomates (in 2020), 62.3% (66/106) are women and 37.7% (40/106) are men.

We also evaluated leadership roles and awards for forensic anthropologists. First, we examined the section chair of the Anthropology Section in the AAFS. Between 1974 and 2020, there have been 37 section chairs, 40.5% (15/37) of

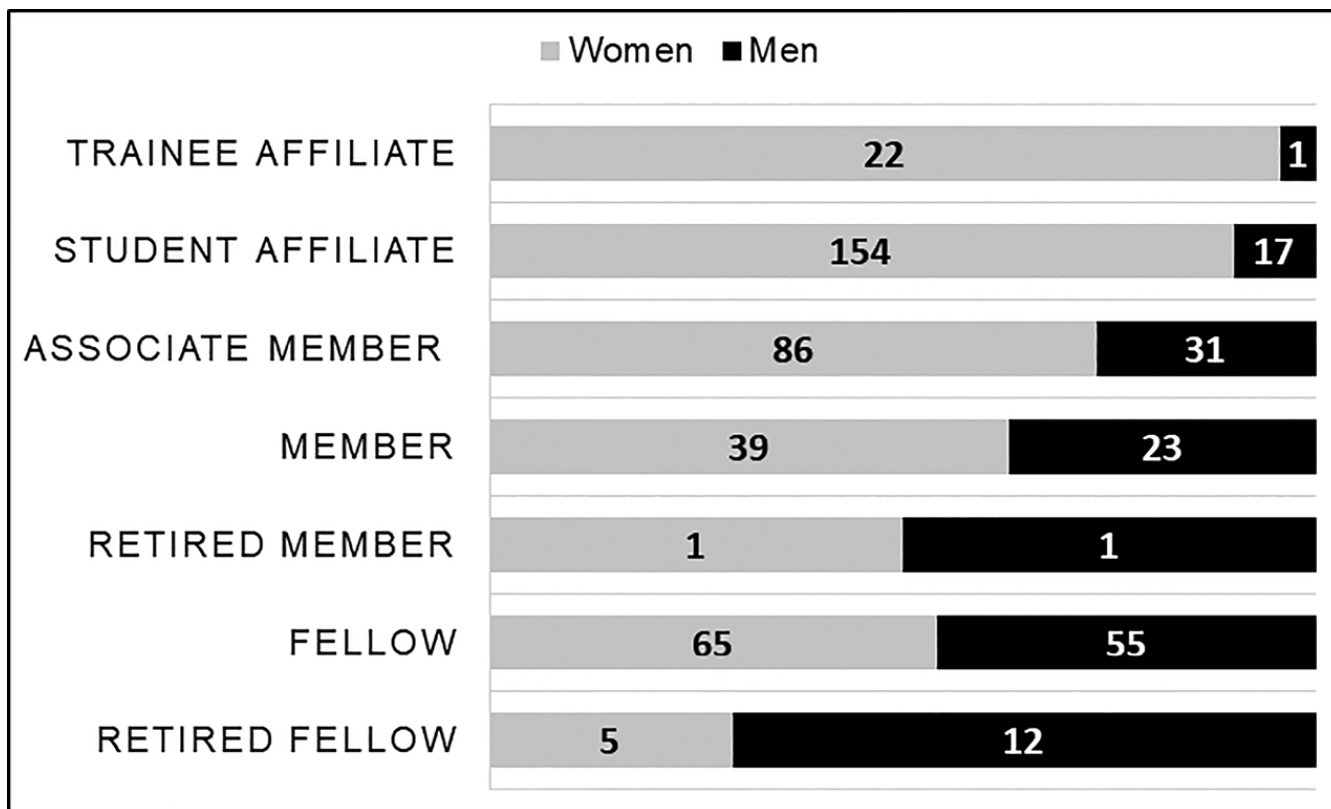


FIG. 1—AAFS Membership as of 2017, based on Passalacqua and Pilloud (2018).

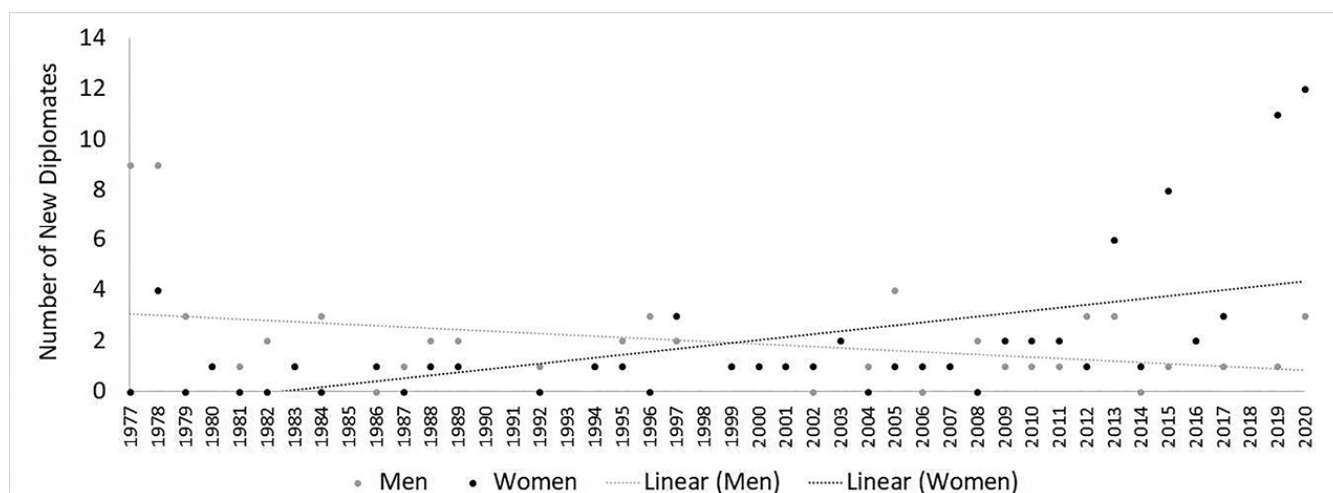


FIG. 2—Number of New Diplomates of the ABFA between 1977 and 2020.

whom have been women and 59.5% (22/37) men (Table 1). Next, we evaluated the awardees of the T. Dale Stewart Award, which is a recognition of exceptional contributions to the discipline. Between 1980 and 2020, this award was given to 38 individuals. Of these, 23.7% (9/38) were women and 76.3% (29/38) men (Table 2). Finally, we examined recipients of the Ellis R. Kerley Research Award, which is given “to recognize excellence in the continuing effort to research and develop methods in forensic anthropology.”<sup>4</sup> The award is chosen from eligible candidates (all members of the AAFS Anthropology Section except student members) who have submitted an abstract for presentation at the AAFS annual meeting, where the recipient of the award is announced. Between 2002 and 2020, the award has been given to 19 individuals, 7 (36.8%) of whom were women and 12 (63.2%) men.

To further explore gender differences, we assessed grant funding using the National Institute of Justice list of graduate research fellowships between 2000 and 2017. These are the only years in which the National Institute of Justice published the names of awardees. In other years, only the names of institutions were made public, making it impossible to evaluate the gender of recipients. The same is true of the research awards, and those data are therefore not analyzed here. Among awarded proposals with forensic anthropology as a research focus ( $n = 14$ ), 57.1% (8/14) of fellowships were awarded to women and 42.9% (6/14) to men. This number is surprisingly comparable despite the much larger number of female student affiliates in the AAFS Anthropology Section (where women outnumber men 9:1). The average award amount for women was \$38,164, and for men it was \$38,419. However, one man served as an outlier with a much lower awarded grant than any other individual, totaling \$16,490. When this outlier is removed, the average fellowship amount for men raises to \$42,804.

We also evaluated job postings for forensic anthropologists between 2010 and 2018, represented by any jobs posted

TABLE 1—Historical list of Section Chairs of the Anthropology Section of the AAFS.

Term	Section Chair
1974–1975	William M. Bass, III
1977–1978	Rodger Heglar
1979–1980	Martha D. Graham
1981–1982	Michael Finnegan
1982–1983	William M. Bass, III
1983–1984	Richard L. Jantz
1984–1985	Judy M. Suchey
1985–1986	J. Stanley Rhine
1986–1987	J. Stanley Rhine
1987–1988	George W. Gill
1990–1991	Douglas H. Ubelaker
1992–1993	Norman J. Sauer
1993–1994	Madeleine J. Hinkes
1995–1996	Kathleen J. Reichs
1996–1997	Alison Galloway
1998–1999	Diane L. France
1999–2000	David M. Glassman
2000–2001	Anthony B. Falsetti
2001–2002	Jerry Melbye
2002–2003	John A. Williams
2003–2004	Elizabeth A. Murray
2004–2005	Marilyn R. London
2005–2006	Paul S. Sledzik
2006–2007	Todd W. Fenton
2007–2008	Michael W. Warren
2008–2009	Laura C. Fulginiti
2009–2010	Thomas D. Holland
2010–2011	Bradley J. Adams
2011–2012	Susan M.T. Myster
2012–2013	William R. Belcher
2013–2014	Ann H. Ross
2014–2015	Phoebe R. Stubblefield
2015–2016	Phoebe R. Stubblefield
2016–2017	Gregory E. Berg
2017–2018	Kate Spradley
2018–2019	Jennifer Love
2019–2020	Paul Emanovsky
2020–2021	Kristen Hartnett-McCann

4. Found at <https://www.elliskerleyfoundation.org/research-award.html> accessed October 2019. All awardees are listed on this website.

on the biological anthropology academic job wiki webpages (see: <http://academicjobs.wikia.com>; Passalacqua 2018). Of these postings, we identified 68 that seemed to indicate preference for a forensic anthropologist and we could also identify who had been hired for that position (see Passalacqua et al. [2020a] for more details). Of these 68 positions, 70.6% (48/68) went to women and 29.4% (20/68) to men.

Finally, we examined research contributions through publications associated with the AAFS. As similar studies were conducted on presentations at the AAPA annual conference, we started with conference presentations at the AAFS. In studies of the AAPA, researchers found that despite the increases of women in the discipline, men still gave more oral presentations, whereas women presented more posters. Additionally, male-organized symposia had half the number of women-authored papers than did

women-organized symposia (Isbell et al. 2012). These same trends were documented in a later study of conference presentations at the AAPA in which more women involvement is documented, but it is not proportional to the higher numbers of women membership (Turner et al. 2018). We evaluated conference presentations for the Anthropology Section of the Annual Scientific Meeting of the AAFS for the 2019 and 2020 annual meetings, as the advance program was necessary to identify which presentations were posters and which were oral presentations. The advance program for the current year is the only one published by AAFS; therefore, we only had access to the programs from these two years. The gender of the first author was used for authorship of the abstract. We found that in 2019, women presented 78% of posters and 78% of oral presentations. In 2020, women presented 85% of posters and 75% of oral presentations. These results indicate no strong difference between presentation type, with more women presenting posters in 2020 than in 2019. These findings are comparable to the rates of membership in the AAFS anthropology (72.7% women and 27.3% men; see Figure 1). We also examined abstracts from the proceedings of the AAFS annual conference between 2002 and 2018. As these proceedings do not list presentation type, we could not further break down the presentations in such a manner. In the early 2000s, there were slightly more men-authored abstracts; however, beginning in 2007, women-authored abstracts became the majority (Table 3, Figure 3). Again, these findings are in line with increased women membership in the Anthropology Section of the AAFS.

We continued to examine these gender trends with article publications in the *Journal of Forensic Sciences*. The journal draws international scholars, and these manuscripts are subject to more extensive peer review than the AAFS abstracts for the annual meeting. For this study, only articles

TABLE 2—Historical List of the T. Dale Stewart Award Given by the Anthropology Section of the AAFS.

Year	Name
1980	Ellis R. Kerley
1981	T. Dale Stewart
1982	Wilton M. Krogman
1982	Mildred Trotter
1983	Harry L. Shapiro
1983	Thomas McKern
1984	J. Lawrence Angel
1985	William M. Bass
1986	Alice M. Brues
1987	Kenneth A.R. Kennedy
1987	Dan Morse
1988	Clyde Snow
1991	Walter H. Birkby
1992	Richard G. Snyder
1992	Stanley Rhine
1994	Sheilagh Brooks
1996	William R. Maples
1998	Michael Finnegan
2000	Richard L. Jantz
2001	Douglas Ubelaker
2004	Eugene Giles
2005	Ted A. Rathbun
2006	Judy M. Suchey
2007	Norman J. Sauer
2008	Jane E. Buikstra
2009	Steven A. Symes
2010	Marcella Sorg
2011	Diane France
2012	Hugh Berryman
2013	Alison Galloway
2014	Thomas D. Holland
2015	William D. Haglund
2016	Bruce Anderson
2017	Frank Saul
2017	Julie Saul
2018	P. Willey
2019	H. Gill-King
2020	Dennis Dirkmaat

TABLE 3—Total Number of Accepted Abstracts for the Anthropology Section of the Annual Scientific Meeting of the AAFS by Year and Gender.

Year	Men % (n)	Women % (n)
2002	54.3 (38/70)	45.7 (32/70)
2003	38.0 (27/71)	62.0 (44/71)
2004	53.8 (57/106)	46.2 (49/106)
2005	38.0 (35/92)	62.0 (57/92)
2006	52.4 (44/84)	47.6 (40/84)
2007	35.3 (42/119)	64.7 (77/119)
2008	34.1 (44/129)	65.9 (85/129)
2009	36.2 (42/116)	63.8 (74/116)
2010	26.9 (35/130)	73.1 (95/130)
2011	37.3 (38/102)	62.7 (64/102)
2012	45.5 (51/112)	54.5 (61/112)
2013	29.8 (39/131)	70.2 (92/131)
2014	28.2 (40/142)	71.8 (102/142)
2015	26.5 (36/136)	73.5 (100/136)
2016	27.8 (37/133)	72.2 (37/133)
2017	25.9 (38/147)	74.1 (38/109)
2018	22.1 (34/154)	77.9 (120/154)

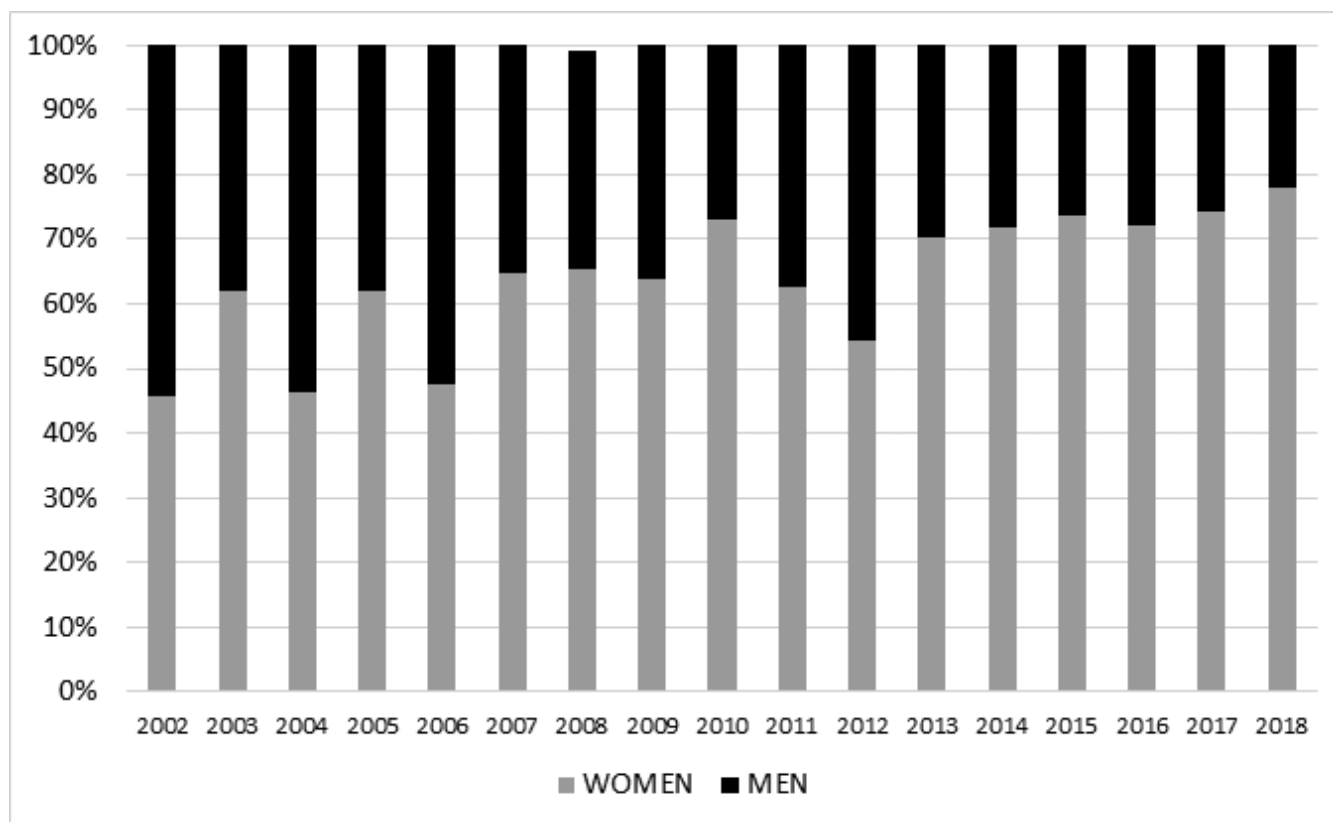


FIG. 3—Number of Women- and Men-Authored Abstracts for the Annual Scientific Meeting of the AAFS.

categorized as “anthropology” or “physical anthropology” were considered. Before the year 2002, manuscripts were not necessarily categorized, and only those of anthropological interest were included. The Physical Anthropology Section of the AAFS (the sponsoring organization of the journal) was founded in 1972 (Stewart 1979), the year we begin our evaluation of journal articles (volume 17, issue 1). The journal is older, however, with the first volume being published in 1956. We reviewed all volumes up to and including volume 63, issue 6 (published in November 2018). Gender was determined based on the first name of the first or sole author, and if possible with an internet search in cases where the gender of the name was not known. In the earlier volumes of the 70s and early 80s, the first names were not listed for the authors, and only initials were used. For these individuals, an internet search, or search for other articles by the same author were used to identify the individual’s first name. We relied on traditional ideas of gendered names, which may not have always corresponded with the individuals’ genders, and there is the potential for some error in this assessment. However, if gender could not be determined with some degree of confidence, the article was not included. We incorporated all article types (i.e., research articles, technical notes, case studies, book reviews) but did not include commentaries, letters to the editor, obituaries, or “for the record.” The results are presented in Table 4 and Figure 4.

The first year that the number of women-authored papers outnumbered those of men was 1998. However, this trend was not permanent until 2004; between 2004 and 2018, 50% or more of publications were authored by women. The number of women authors in the 1970s, 1980s, and majority of 1990s was quite low. Between 1972 and 1997, there were 282 manuscripts that fit our criteria for inclusion. Of these, 78.0% (220/282) had men as the first or sole author, and 22.0% (62/282) had women as the first or sole author. Of note at this same time, there were 16 book reviews, 8 of which were authored by men and 8 authored by women. This disproportionate gendered distribution means that book reviews made up 15.4% of the women-authored papers, and only 3.7% of the male-authored papers. Also, worth noting is that there were four symposia in honor of forensic anthropologists documented in the journal, all of which honored men. These forensic anthropologists (and year honored) were: William M. Bass (1995), William R. Maples (1999), T. D. Stewart (2000), and Ellis R. Kerley (2001).

#### “Why Are There So Many Women in Forensic Anthropology?”

While the focus here is specifically on larger numbers of women in forensic anthropology, it is worth briefly discussing



TABLE 4—Total Number of Anthropology Publications in the Journal of Forensic Sciences by Year and Gender.

Year	Men % (n)	Women % (n)	Year	Men % (n)	Women % (n)
1972	100.0 (1/1)	0.0 (0/1)	1996	64.7 (11/17)	35.3 (6/17)
1973	100.0 (1/1)	0.0 (0/1)	1997	81.3 (13/16)	18.7 (3/16)
1974	0.0 (0/0)	0.0 (0/0)	1998	42.1 (8/19)	57.9 (11/19)
1975	50.0 (1/2)	50.0 (1/2)	1999	48.6 (17/35)	51.4 (18/35)
1976	50.0 (1/2)	50.0 (1/2)	2000	72.0 (18/25)	28.0 (7/25)
1977	100.0 (2/2)	0.0 (0/0)	2001	76.9 (20/26)	23.1 (6/26)
1978	71.4 (5/7)	28.6 (2/7)	2002	60.7 (17/28)	39.3 (11/28)
1979	100.0 (7/7)	0.0 (0/7)	2003	66.7 (14/21)	33.3 (7/21)
1980	75.0 (3/4)	25.0 (1/4)	2004	38.1 (8/21)	61.9 (13/21)
1981	100.0 (4/4)	0.0 (0/4)	2005	41.4 (12/29)	58.6 (17/29)
1982	100.0 (3/3)	0.0 (3/0)	2006	42.3 (11/26)	57.7 (15/26)
1983	83.3 (10/14)	16.7 (2/14)	2007	42.3 (11/26)	57.7 (15/26)
1984	78.6 (11/14)	21.4 (3/14)	2008	50.0 (23/46)	50.0 (23/46)
1985	85.7 (12/14)	14.3 (2/14)	2009	50.0 (20/40)	50.0 (20/40)
1986	80.0 (12/15)	20.0 (3/15)	2010	40.0 (22/55)	60.0 (33/55)
1987	84.6 (11/13)	15.4 (2/13)	2011	34.0 (16/47)	66.0 (31/47)
1988	76.5 (13/17)	23.5 (4/17)	2012	28.9 (13/45)	71.1 (32/45)
1989	77.8 (14/18)	22.2 (4/18)	2013	27.7 (13/47)	72.3 (34/47)
1990	63.6 (7/11)	36.4 (4/11)	2014	50.0 (26/52)	50.0 (26/52)
1991	75.0 (18/24)	25.0 (6/24)	2015	40.5 (30/74)	59.5 (44/74)
1992	77.8 (14/18)	22.2 (4/18)	2016	39.3 (22/56)	60.7 (34/56)
1993	81.0 (17/21)	19.0 (4/21)	2017	42.5 (17/40)	57.5 (23/40)
1994	66.7 (8/12)	33.3 (4/12)	2018	27.5 (14/51)	72.5 (37/51)
1995	77.8 (21/27)	22.2 (6/27)			

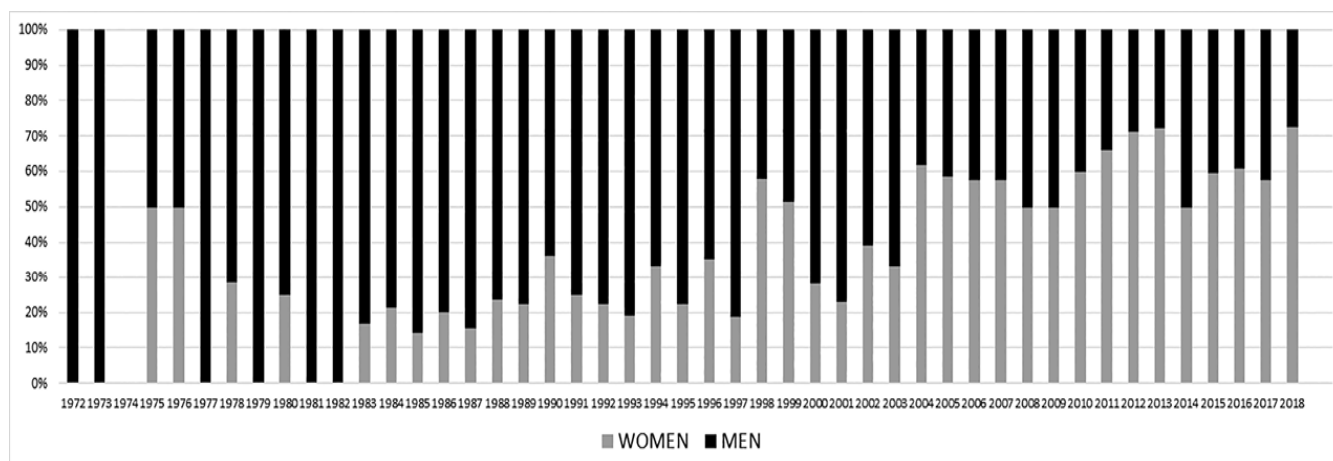


FIG. 4—Number of Women- and Men-Authored Journal Publications in the Journal of Forensic Sciences between 1972 and 2018.

the role of women in other STEM careers. Though the issue of gender bias is essentially universal across professions, multiple studies have attempted to explain the lack of women in STEM careers. Some studies have attempted to identify inherent biological differences between men and women that may or may not account for these differences (Ceci et al. 2009; Su et al. 2009; Wai et al. 2010). One study claims that the lack of women is not due to discrimination, but because of, “family formation and childrearing, gendered expectations, lifestyle choices, and

career preferences—some originating before or during adolescence . . .” (Ceci and Williams 2011:3161). These authors further suggest that all of these factors could be a hindrance to a career in science and math and that, even at a young age, girls are drawn to people and not things, which stimulates a career in medicine or biology as opposed to other sciences (Ceci and Williams 2011).

Despite these (somewhat dubious) claims of biological differences between men and women, many other researchers

have documented a gender bias in the sciences based on stereotypes that prevent women from fully engaging in scientific disciplines (e.g., Blickenstaff 2005; Bornmann 2007; De Welde and Laursen 2011; Reuben et al. 2014; Sheltzer and Smith 2014; Xu 2008). For example, an early study found that the peer review process was riddled with sexism and nepotism that generally put women at a disadvantage (Wenneras and Wold 1997). Another study found that when men and women had identical applications, male applicants were consistently found to be more competent and provided with more opportunities for mentoring (Moss-Racusin et al. 2012). A recent summary study on STEM fields documents multiple gender imbalances, in which women are underrepresented in grant applications, publications, editorial boards, and in the receipt of professional awards (Grogan 2019), findings we have also found in this analysis of forensic anthropology. In fact, Kugler and colleagues (2017) found that even though great efforts are being made to draw women to the sciences, women are still subjected to multiple signals that push them away. This study argued that rather than there being *one* primary reason deterring women from entering the sciences, it is actually the presence of *multiple* negative signals that propels women to switch disciplines, thereby highlighting some of the pervasive sexism that is still present in the sciences.

While trends are moving toward more inclusion of women in forensic anthropology, there is still a pervasive gender bias. For example, in looking at a summary figure of the roles of women in forensic anthropology (Figure 5), it is clear that women make up the vast majority of membership of the Anthropology Section, yet these numbers are not currently being reflected in positions of power or those receiving prestigious awards. The lack of women in these

mid-to-late career roles may mean that women are leaving the discipline early or are not being fully recognized for their achievements once they reach their late career. There may be multiple signals to women in forensic anthropology pushing them to leave mid-career, which may also be reasons women are not being considered as equals to men.

Gendered expectations within forensic anthropology may play a large role in the retention and recognition of women within the discipline. For example, in a recent op-ed, a woman university professor discussed the difficulty students had in navigating their relationship with her. Students were not sure how to handle a woman who was neither their “mother” nor their “girlfriend.” In this discussion, the author felt either sexualized or maternalized in student interactions (Hay 2016). The same can be true of professional relationships with women and the inability for others to separate these roles from professional roles. Aside from any sexual connotations in how women are treated, there are also negative perceptions against women as mothers. For example, there is evidence to suggest a “maternal bias” in academia in that mothers are perceived to be less successful than women without children (King 2008). Mothers may also be subject to biases in gaining employment (Heilman and Okimoto 2008). While Passalacqua et al. (2020b) did not find significant differences in salaries between female and male forensic anthropologists, there is a well-documented “mother wage penalty” or “motherhood penalty” in the work force broadly (e.g., Anderson et al. 2003; Avellar and Smock 2003; Benard et al. 2007; Budig and England 2001) in which mothers earn approximately 5% less *per child*. This wage penalty persists even when accounting for factors such as gender (i.e., fathers are not affected), race,

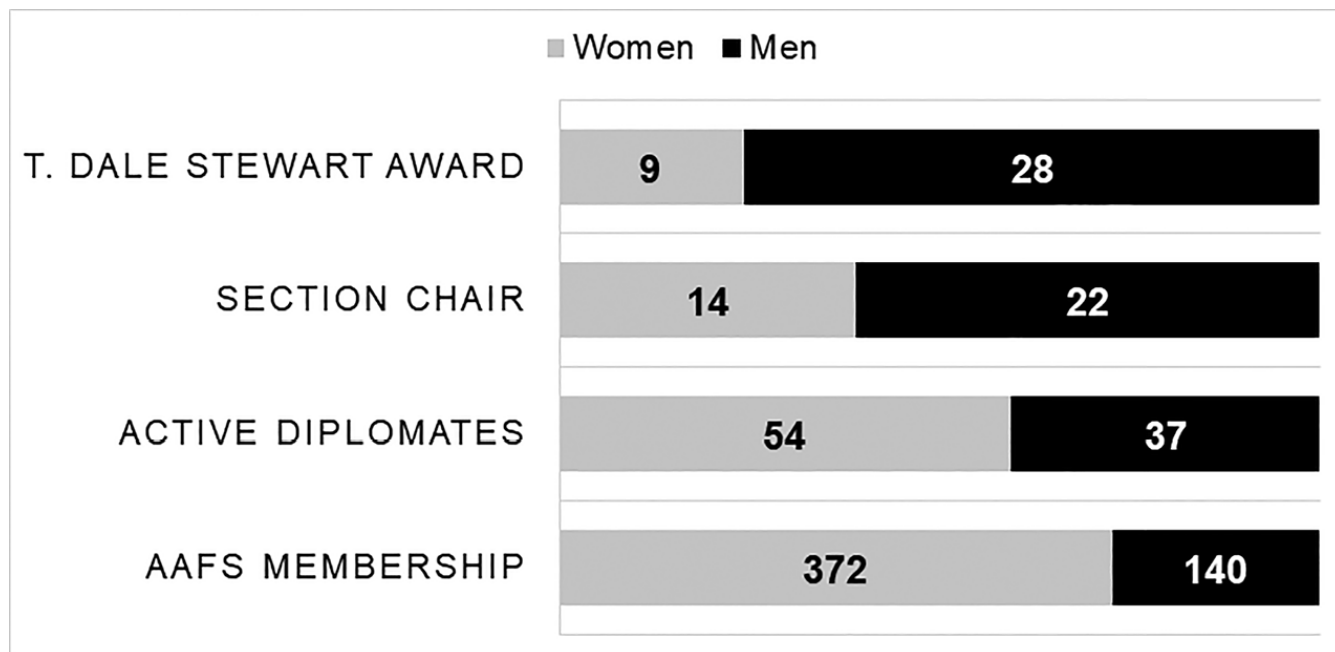


FIG. 5—Summary of the Role of Women in Forensic Anthropology.

experience, and education (Benard et al. 2007). A more recent study on college-educated women in Israel found that each child reduced a woman's wage by 6.6%, whereas a man's salary would *increase* by 3.4% (Gafnie and Siniver 2015). Further, an additional recent survey found that working mothers were more likely to be seen as ineffective (i.e., a "bad parent"), whereas fathers were not (Okimoto and Heilman 2012).

There are also gendered expectations of women in various professional settings that can hinder productivity and adversely affect one's sense of worth in the workplace. For example, it is not uncommon for women in academic and laboratory positions to take on higher service roles and much of the unseen/unquantified burden of mentorship. This work is traditionally less valued in terms of tenure, promotion, and salary raises. However, this work is a critical component to creating a comfortable work environment and for the development of the next generation of scholars. In the face of career challenges and gender stereotypes, women may be more likely to leave the discipline or to seek positions with more flexibility, less authority and responsibility, and lower salary.

In addition to these gendered expectations, sexual harassment is an issue for women in the workplace, and is increasingly being documented within anthropology as a whole. For example, during biological anthropology fieldwork (Clancy et al. 2014; Nelson et al. 2017), ethnographic fieldwork (Kloß 2017), in California archaeology (Radde 2018), and in southeastern archaeology (Meyers et al. 2018). Journalist Michael Balter has documented many such cases in anthropology and continues to do so on his blog (<http://michael-balter.blogspot.com/>). There is also increasing concern over sexual harassment at academic conferences (Shen 2015), where there may be little oversight or repercussions for poor behavior. In light of recent events at the Society for American Archaeology annual meeting in 2019 (see Bondura et al. 2019; Kilgroe 2019; The Collective Change 2019; Wade 2019), many organizations are reevaluating their policies regarding sexual harassment and meeting attendance. Professional organizations are within their right to intervene in situations of inappropriate behavior; however, codes of appropriate conduct and consequences for violations of these codes need to be made clear to members and attendees (Passalacqua and Pilloud 2018). The website [metoanthro.org](http://metoanthro.org) also provides a guideline for best practices at events that could serve as a model to other organizations looking to revamp their ethical codes and codes of conduct.

The question posed in the title of this manuscript, "why are there so many women in forensic anthropology?" reinforces these gendered stereotypes by putting the onus on women to *explain why* they are drawn to forensic anthropology, with the assumption that they should not be and therefore need to defend their presence. There is no need for women to explain why they are involved, and it is certainly not a question we need to "get to the bottom of" (as stated in Williams 2011:338). Another way to phrase this question is *why are there not more men* in forensic anthropology or the

forensic sciences in general? All of the forensic sciences are increasingly being dominated by women, and there is a continuous discussion of this fact (e.g., Barbaro 2019; Houck 2009; Wolf et al. 2016). However, others have noted gender biases in the forensic sciences, despite larger numbers of women (Ward et al. 2019). Perhaps there is another factor to consider here, and that may be that men are being encouraged to pursue higher paying and more prestigious careers in STEM, which then creates an opportunity for women to enter the applied (and often regarded as less theoretical/scholarly) forensic sciences. However, those men who stay in the forensic sciences are continuing to gain leadership roles and professional recognition.

### **The Need for Diversity and Inclusivity in Forensic Anthropology: Solutions for the Future**

Instead of focusing on demanding women to explain their larger numbers within the forensic sciences and forensic anthropology, there should be an effort to *improve* gender equity and overall diversity within the disciplines. As such, there needs to be a shift in how this question is posed, with a focus on retention and promotion of women within the discipline. We should be asking, how do we promote, retain, and recognize women in forensic anthropology? Solutions might include workplace accommodations such as: flexible hours, maternity/paternity leave, workplace sexual harassment and discrimination training, implicit bias training, transparency on equal wages, and clear policies and repercussions for sexual harassment and discrimination (Passalacqua and Pilloud 2018). Conferences should be family friendly to encourage and ensure increasing women participation (Bos et al. 2019). Within the discipline, there should be a move to double-blind and/or open peer reviews to promote collegiality and professional dialogue. Editors can also play a role in overseeing that peer reviews maintain a professional tone with meaningful critique. They can further ensure diversity in acquiring peer reviewers, assembling editorial boards, and in authorship. Women also need professional advocates, either men or other more senior/established women in the discipline. Through such concerted efforts, forensic anthropology is poised to serve as an example for biological anthropology *and* the forensic sciences in promoting gender equity.

Another issue in the question, "why are there so many women in forensic anthropology?" is its implicit gender binary, which may also be viewed as exclusionary. As we reframe our thinking of how women are treated in forensic anthropology, it is also important to consider the overall lack of diversity in the discipline, as well as intersectional identities. To combat the uniformity of forensic anthropology (in terms of race, ethnicity, ability status, parental status, sexual orientation, gender identity, educational background, etc.) we need to implement strategies that model inclusivity. This modeling should be apparent in our behavior and in our

research questions and presentations. By modeling inclusivity in this way, we send a signal to potential scholars that forensic anthropology is a place where people of diverse backgrounds can thrive. We also need to actively recruit and promote diverse students at all levels of education and employment. Additional opportunities should be provided for training and mentorship of individuals who may need this extra support to navigate the world of academia and the forensic sciences. It is promising to see that some of this work is being undertaken by the Diversity and Inclusion Committee as part of the Anthropology Section of the AAFS.

A recent publication by the National Institute of Justice highlights the need to diversify the forensic sciences, claiming that “as the forensic sciences continue to evolve, it is critical that we leverage the skills and expertise of people from all backgrounds to provide innovative solutions to complex issues” (Wagstaff and LaPorte 2018:2). The authors further discuss the concept of the “leaky pipeline” and the idea that individuals from underrepresented groups may leave a discipline at various points along the educational and career trajectory. These are similar in tone to concepts such as “glass ceiling,” “confidence gap,” and “chilly climate” (Turner et al. 2018). To address these issues in the forensic sciences, the National Institute of Justice has begun outreach efforts to historically underrepresented groups. For example, they have started a partnership with the United States White House Initiative of Historically Black Colleges and Universities to discuss opportunities with faculty and graduate students (Wagstaff and LaPorte 2018:2). The AAPA has taken similar concrete steps to diversify biological anthropology (Antón et al. 2018). The Anthropology Section of the AAFS has also begun similar efforts with the inception of its Diversity and Inclusion Committee. Further, the new mentorship award of the Anthropology Section of the AAFS is step in the right direction, as this recognizes alternate measures of success and rewards the sometimes-invisible mentoring work that is traditionally undertaken by women.

## Conclusions

Within this paper, we have documented that despite growing participation of women in forensic anthropology, there are still disparities in leadership roles and broad recognition in the discipline as evidenced by research and career awards. Women still face challenges in their career that may hold them back from advancing. These challenges may stem from gendered expectations, sexism, biases against working mothers, lack of mentorship and support, and additional hurdles that may arise during the grant and manuscript peer review processes.

While the presence of women is growing in forensic anthropology, there is still work to be done to diversify the discipline. To effectively transform forensic anthropology to be a welcoming, inclusive environment for diverse and

stimulating academic thought requires a radical rethinking. The goal cannot be to move women and individuals of traditionally underrepresented groups into positions currently (or recently) occupied by cisgender White men. Instead, there needs to be a restructuring of the power paradigm and how we define success and excellence. Forensic anthropology is currently in an important transitional period in which the discipline is being radically altered. We have the opportunity now to shape the future of the discipline into one of increasing professionalism and as a model to the forensic sciences in terms of equity for all practitioners.

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