An index of her own: An investigation of the proportion of women indexed in evolutionary psychology textbooks.

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Abstract

Gender bias is ubiquitous in academia. It has been demonstrated across a broad range of domains, including grant awards and peer review. Previous research has also found that this bias is reflected in textbooks. Here we evaluated seven books on evolutionary psychology, five of which were edited volumes. We assessed whether (1) women were less likely to be indexed than men and (2) women were less likely to be a contributor to edited volumes than men. In addition, we examined which women were featured in more than one book. Using descriptive statistics and meta-analytical techniques, we found that around 1 in 4 entries in the book indexes were women, and around 4 in 10 contributors to edited volumes were women. Around 50 women (out of 835) were indexed in more than one volume. We discuss the potential mechanisms that could produce these findings. Finally, we offer suggestions on how the inclusion of women could be improved. **This is a preprint cite at own risk, this version 5-12-2024.**

Keywords: Gender; Women; Textbooks; Citation; Evolutionary Psychology

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Gender disparities are well documented in academia, across a number of domains (Shannon et al., 2019; Llorens et al., 2021). These include knowledge production (e.g., Bird, 2011; West et al., 2013; Mihaljević-Brandt, Santamaría & Tullney, 2016; Sá et al., 2020; Wheatley & Ogunlana, 2023), outcomes from peer review (Fox & Paine, 2019; but see Squazzoni et al., 2021), talk invitations (e.g., Schroeder et al., 2013), audience size at a conference (Barreto et al., 2024), tenure of a leadership position (e.g., Chowdhary et al., 2020; Llorens et al., 2021), editorial board membership (Cho et al., 2014), inclusion on reading lists (e.g., Harris et al., 2020), prizes (Lincoln et al., 2012), grants (e.g., Chaudhary et al., 2021; Schiffbaenker et al., 2022) and receiving adequate grant reviews (Silbiger & Stubler, 2019; e.g., Biernat et al., 2020). In (nearly) all cases, women tend to be disadvantaged compared to men. Other characteristics such as ethnicity or disability status exacerbate these disparities (e.g. Ginther, Kahn & Schaffer, 2016). Recently, Ceci, Kahn and Williams (2023) examined six different domains of academia for gender bias: (1) tenure-track hiring, (2) grant funding, (3) teaching ratings, (4) journal acceptances, (5) salaries, and (6) recommendation letters. Across three domains—grant funding, journal acceptances, and recommendation letters—they found relative parity between men and women. Across two domains, teaching ratings and salaries, they found support for a bias against women. The authors commented that these biases, though sizable, were smaller than expected based on the literature. In one domain, hiring, they found a relative advantage for women over men.

In this paper, we focus on the question of gender bias in academic texts. A large body of research has documented that women tend to receive fewer citations than men in the scientific literature. A bias in citations has been documented in both STEM (science, technology, engineering, and mathematics) and non-STEM subjects (Ghiasi, Larivière &

Sugimoto, 2015; e.g., Caplar, Tacchella & Birrer, 2017; Dion, Sumner & Mitchell, 2018; Odic & Wojcik, 2020; Dworkin et al., 2020; Wang et al., 2021; Fulvio, Akinnola & Postle, 2021; Chatterjee & Werner, 2021; Teich et al., 2022; but see Esarey & Bryant, 2018). For example, Caplar, Tacchella and Birrer (2017) estimated that women received around 10% fewer citations than expected compared to men in astronomy. This estimate is close to estimates from other STEM disciplines, for example, engineering (e.g., Ghiasi, Larivière & Sugimoto, 2015). Even in the social sciences, where women are more visible and/or research active, and researchers are argued to be more aware of these biases (e.g., sociology: Davenport & Snyder, 1995), a comparable disparity in citations exists.

There is considerable debate over the size of the 'citation gap' attributable to gender. In a study covering 37,000 publications by 8,500 Norwegian researchers, Aksnes et al. (2011) found that women were cited less than men in four of five categories of academic rank, in four of six age groups, and in 9 of 14 disciplines. However, they argued that the citation gap was small and that ambiguity existed, suggesting that the gap is attributable in part to the volume of articles produced by men and women respectively. That is, men produce more articles than women, and other research has also argued that men are more likely to self-cite than women (King et al., 2017; e.g., Andersen et al., 2019). Thelwall and Nevill (2019) found a small male citation advantage in journal articles from biochemistry, genetics and molecular biology, consistent with an average male citation advantage of 0.2% (Thelwall, 2018). Fox and Paine (2019) analysed over 12,000 articles from journals in Ecology and Evolution and estimated that the difference in citations between men and women was around 2%. A minority of studies has found no support for a citation gap and even an advantage for women. For example, Hengel (2019) found that, after accounting for the higher citation rate of male Nobel Prize winners, women were cited more than men (also see Hengel & Moon, 2020). It should also be noted that the size of the citation gap depends on which metrics are chosen. For example, some authors take into account authorship position, whereas others do not. Some authors employ a large window for

tracking citations (e.g., > 5 years), others do not. Wu (2024) reviews the different operationalisations of tests for the gender gap and how they are impacted by different choices. A key conclusion from their review, is that part of the citation gap is attributable to the fact that women produces fewer articles throughout their career.

A discrepancy in citations and coverage of women's research as compared to men's also extends to textbooks and course curricula (Harris et al., 2020). The data suggest that work by women is less likely to be included in a textbook than that by men. An early study by Mayer (1989) examined eight human geography textbooks and found that women's work received less coverage than men's. Mathews and Andersen (2001) found that women were not adequately represented in political science books edited by men. In the life sciences, women were found to be underrepresented in textbooks (Damschen et al., 2005; Wood et al., 2020; Simpson, Beatty & Ballen, 2021). In a sample of twelve textbooks from geosciences, Phillips and Hausbeck (2000) found that more than 9 out of 10 innovations or discoveries were attributed to men. Wood et al. (2020) examined seven textbooks in biology, and in addition to an underrepresentation of authors of colour, they found women to be underrepresented. Harris et al. (2020) evaluated 2,435 readings from 129 unique courses at an American university. They found that the mean percentage of female authors per reading was around 34%. Around one third of readings were female-led, i.e., by a female first or sole author. The highest percentage was found in the social sciences (40%), but men still outnumbered women.

Current study

Relatively little is known about a potential gender bias in citations for evolutionary psychology and related disciplines. Schmitt (2015) has argued that, overall, evolutionary psychology is relatively unbiased in its citations. In order to contribute some additional data to this debate, we examined the indexes of seven major recent textbooks and reference works covering evolutionary psychology. We also examined the gender of

contributors to edited volumes. Our prior assumption was that fewer women than men would be indexed in textbooks and contribute to edited volumes, but we did not have any specific estimate in mind regarding the magnitude of any such difference. Our project is thus both exploratory and descriptive.

Methods

Ethical approval

This research was approved by the Faculty of Health and Life Sciences ethics committee at Northumbria University (Ref. 51237)

Data source

We selected textbooks and reference works based on recency (within the last 5 years of the inception of this project, thus excluding Barrett, Dunbar & Lycett, 2002; Dunbar & Barrett, 2007, for example) and coverage. For example, we excluded textbooks focusing on a specific approach to evolutionary psychology (e.g., Neuroscience: Ray, 2012) or books by authors from evolutionary psychology but on a specific subject (e.g., Religion: Liddle & Shackelford, 2020). We also excluded books more broadly dealing with evolution and human behaviour (Laland & Brown, 2011; e.g., Boyd & Silk, 2014). We excluded 'living' online-only resources as their content could change during the project (Shackelford & Weekes-Shackelford, 2021). The seven textbooks and reference works selected were:

- Buss (2019) *Evolutionary Psychology - New Science of the Mind (6th ed.)*,
- Shackelford (2020a) *The SAGE Handbook of Evolutionary Psychology: Foundations of Evolutionary Psychology*,
- Shackelford (2020b) *The SAGE Handbook of Evolutionary Psychology: Integration of Evolutionary Psychology with Other Disciplines*,
- Shackelford (2020c) *The SAGE Handbook of Evolutionary Psychology: Applications of Evolutionary Psychology*,

- Welling and Shackelford (2020) *The Oxford Handbook of Evolutionary Psychology and Behavioral Endocrinology*,
- Workman and Reader (2021) *Evolutionary Psychology: an introduction (4th ed.)* and
- Workman, Reader and Barkow (2020) *The Cambridge Handbook of Evolutionary Perspectives on Human Behavior*.

Five of the textbooks and reference works selected were edited volumes (Shackelford, 2020a,b,c; Welling & Shackelford, 2020; Workman, Reader & Barkow, 2020). For brevity, we refer to the seven textbooks and reference works in what follows in the paper as 'textbooks'. We are however, well aware that while Buss (2019) and Workman and Reader (2021) might be assigned as textbooks for undergraduate or postgraduate study, this is less likely to be the case for the other books. We believe that the other books are unlikely to be assigned as course reading in their entirety, though likely chapters will be used in teaching and research at postgraduate level.

Our research questions are (1) whether women were less likely to be indexed than men in evolutionary psychology textbooks and (2) whether women were less likely to be a contributor to edited volumes than men. In addition, we examined which women were featured in more than one textbook.

Coding

A research assistant and the first author completed the coding. We coded all entries for individuals listed in the index at the end of each book, provided they were an (academic) author (e.g., excluding Genghis Khan, Mark Zuckerberg or Kofi Annan), as famous non-academic figure entries might be biased toward men. We thus excluded historical figures and also famous exemplars from literature (e.g., Homer) or philosophy (e.g., Aristotle), unless they were associated with psychology, in which case they were included (e.g., William James) or where they were cited in context (for example, a famous

writer is cited in the context of evolutionary approaches to literary studies, such as Jane Austen). Rarely, and mostly restricted to Shackelford (2020c), the entry was for a paper written by a journalist rather than an academic. We decided to include the entries in those few instances. Similar to Wood et al. (2020), we relied on the author's first name to determine whether they presented themselves as a man or a woman. Where the first name was not included but rather the initials were given, we conducted a search for the cited publication and/or academic websites (e.g., GoogleScholar) to determine author sex. Where we suspected that first names could be ambivalent (e.g., Robin), we looked up the person on their university page, personal website or other source (e.g., Scholar Google) to determine coding. We acknowledge that this is a binary construction of gender and assumes that an individual's gender identity matches how they present themselves. This coding scheme can misclassify individuals, given cultural differences in the kinds of names that are given to women versus men, and also the fact that many names are unisex. This coding scheme also cannot take into account self-reported gender categories (i.e., cisgender, transgender, gender-non-conforming, non-binary, and agender identities, Wood et al., 2020). With respect to the latter issues, we would just note that science as an institution historically has been biased against members of the female sex, with limited opportunities for women to receive an academic training: in the UK, for example, the University of London admitted its first female students ("the London Nine") only in 1868– 156 years ago–while Oxford did not award degrees to women until 1920, and Cambridge did not do until the late 1940s (Carter, 2018; Delap & Griffin, 2020; University of Oxford, 2024). In part, then, our interest stems from whether these historical limitations on women's opportunities might still play out in some way in the current scientific literature. For three authors from the index of Shackelford (2020a) and three authors from the index of Shackelford (2020c), we were unable to attribute the gender. We coded only inclusion and not the number of index entries, as the textbooks varied in layout and length; this hampers any comparison. Similarly, given that an author could be indexed by multiple contributors

to an edited volume and that volumes differ in typesetting, we did not attribute where the author was indexed in edited volumes.

We also coded all contributors to edited volumes. For contributors, we did not code introductory or concluding chapters as these are by the editors. Given the limited number of contributors, we counted contributors only once within a volume, even if they contributed to multiple chapters.

Data analysis

All analyses were conducted in R 4.2.1 (R Development Core Team, 2008). We report descriptive statistics (i.e. the proportions or percentages) and a Random Effect Meta-Analysis on the proportions via the 'meta' package (Schwarzer, Carpenter & Rücker, 2015; Balduzzi, Rücker & Schwarzer, 2019). The meta-analysis was estimated via Maximum Likelihood, and the Agresti-Coull method (Agresti & Coull, 1998) was used for the estimation of the confidence interval. Next, we used a fuzzy joining procedure via optimal string alignment ('OSA') of eight characters, in combination with a strict match of the first three letters of the last name, to identify which women were indexed in more than one textbook (Navarro, 2001; Robinson, 2020). The data, code, and analysis document are available from the Open Science Framework.

Results

Proportion of women indexed in textbooks

Figure 1 shows the distributions for women and men indexed in the seven textbooks. Shackelford (2020c) has the most entries overall and Welling and Shackelford (2020) has the highest proportion of women included.

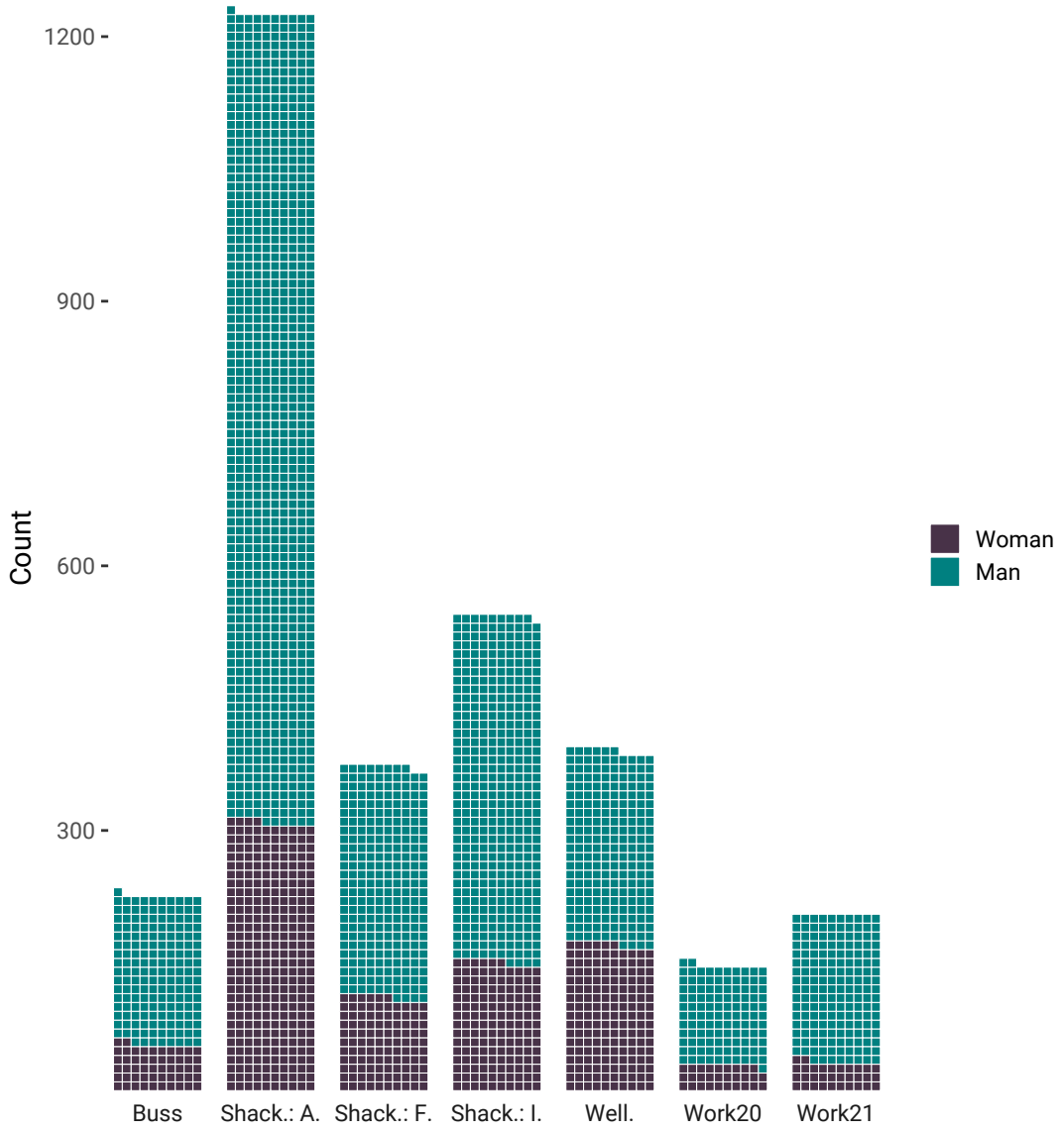

Figure 1. Women indexed in Evolutionary Psychology textbooks and reference works. Note: Buss = Buss (2019); Shack.: A. = Shackelford (2020): Applications; Shack.: F. = Shackelford (2020): Foundations; Shack.: I. = Shackelford (2020): Integration; Well. = Welling and Shackelford (2020); Work20 = Workman, Reader and Barkow (2020); Work21 = Workman and Reader (2021)

Figure 2 summarises the results of the meta-analysis for the seven textbooks. There were 3,077 entries in total of which 835 (27.1%) were women. The pooled random effect estimate showed that around 1 in 4 entries were women, 25.91%, 95% CI [20.69%; 33.43%]. Welling and Shackelford (2020) stood out as having substantially more women included than other textbooks, 43.01%, 95% CI [38.16%; 47.99%]. Each of the remaining six textbooks indexed less than 30% women. Excluding Welling and Shackelford (2020) leads to an estimate of less than 1 in 4 entries being women (random effect estimate of 23.97%, 95%CI [20.83%; 27.41%]). Excluding the book with most authors indexed overall (Shackelford, 2020c) leads to a random effect estimate of 26.03%, 95%CI [19.92%; 33.23%], which is close to the original estimate with all books of 25.91%. It is thus unlikely that the overall result is an artefact of this single volume.

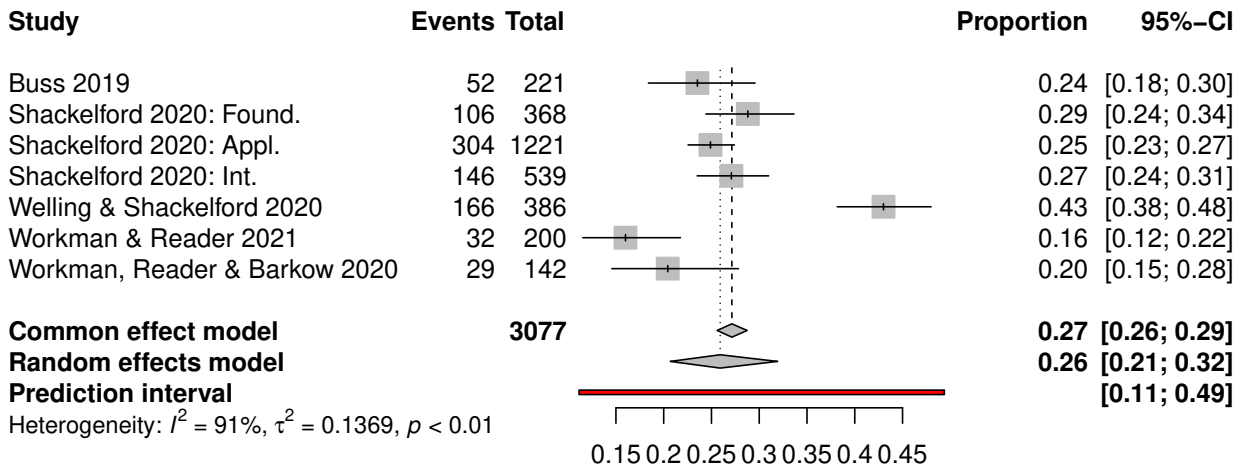

Figure 2. Forest plot of proportions of women indexed ('events' are women indexed). The tips of the diamond present the 95% CI for the effect size estimates, the red bar interval represents the prediction interval.

Women receiving more than one index entry across textbooks

Our matching procedure found that 53 women (out of 835) were indexed in more than one textbook (Table 1). The majority of these women, 34 out of 53, were indexed in two

out of seven textbooks. Nine women were indexed in three textbooks, and six were indexed in four textbooks (Mary Ainsworth, Laura Betzig, Elaine Hatfield, Margaret Mead, Linda Mealey, and Catherine Salmon). Anne Campbell and Maryanne Fisher were indexed in five out of seven textbooks, and Leda Cosmides was indexed in six out of seven. Margo Wilson was indexed in all seven textbooks. Figure 3 is a word cloud summary with the names of women who were indexed as a function of the number of textbooks in which they appear.

Table 1

Women indexed more than once in textbook

	Buss 2019	Shackelford 2020: App.	Shackelford 2020: Found.	Shackelford 2020: Int.	Welling and Shackelford 2020	Workman and Reader 2021	Workman, Reader and Barkow 2020
Ainsworth, M.			X	X	X	X	
Arístegui, I			X	X			
Barrett, L.				X		X	X
Betzig, L.	X		X	X			X
Brosnan, S.F.		X		X			
Brown, G.R.		X				X	
Burbank, V.	X				X		
Burch, R. L.				X			X
Campbell, A.	X	X	X		X		X
Carey, S.				X		X	
Cashdan, E.	X			X			
Chiao, J.Y.		X		X			
Cosmides, L.	X	X	X	X	X	X	
Dijkstra, P.			X		X		
Draper, P.				X	X	X	
Eagly, A.H.				X		X	
Fine, C.			X	X			
Fisher, M.L.	X	X		X	X		X
Fiske, S.T.		X	X				
Fleischman, D.	X	X					
Goldman-Rakic, P.S.				X	X		
Grabe, M.E.		X			X		
Hatfield, E.			X	X	X	X	
Harris, C.R.			X	X			
Harris, J.R.				X		X	X
Haselton, M.G.				X	X		
Hawkes, K.	X			X	X		
Hawley, P.H.	X			X			

Table 1

Women indexed more than once in textbook (continued)

	Buss 2019	Shackelford 2020: App.	Shackelford 2020: Found.	Shackelford 2020: Int.	Welling and Shackelford 2020	Workman and Reader 2021	Workman, Reader and Barkow 2020
Heerwagen, J.H.	X	X		X			
Hill, S.E.	X				X		
Hopcroft, R.L.	X		X	X			
Hrdy, S.B.				X	X		X
Karmiloff-Smith, A.				X		X	
Langlois, J.H.	X				X		
Low, B.S.	X		X	X			
Mace, R.			X	X			
Mead, M.	X			X		X	X
Mealey, L.	X	X		X		X	
Neel, R.				X	X		
Petrie, M.		X	X		X		
Polderman, T.J.C.			X	X			
Salmon, C.	X	X	X				X
Scelza, B.A.			X		X		
Spelke, E.				X		X	
Still, M.C.		X		X			
Syme, K.	X	X					
Taylor, S.E.	X				X		
Quinlan, M.B.	X				X		
West-Eberhard, M.J.		X		X			
Wilson, M.	X	X	X	X	X	X	X
Yorzinski, J.L.		X		X			
van Anders, S.M.				X	X		
Zuk, M.			X			X	

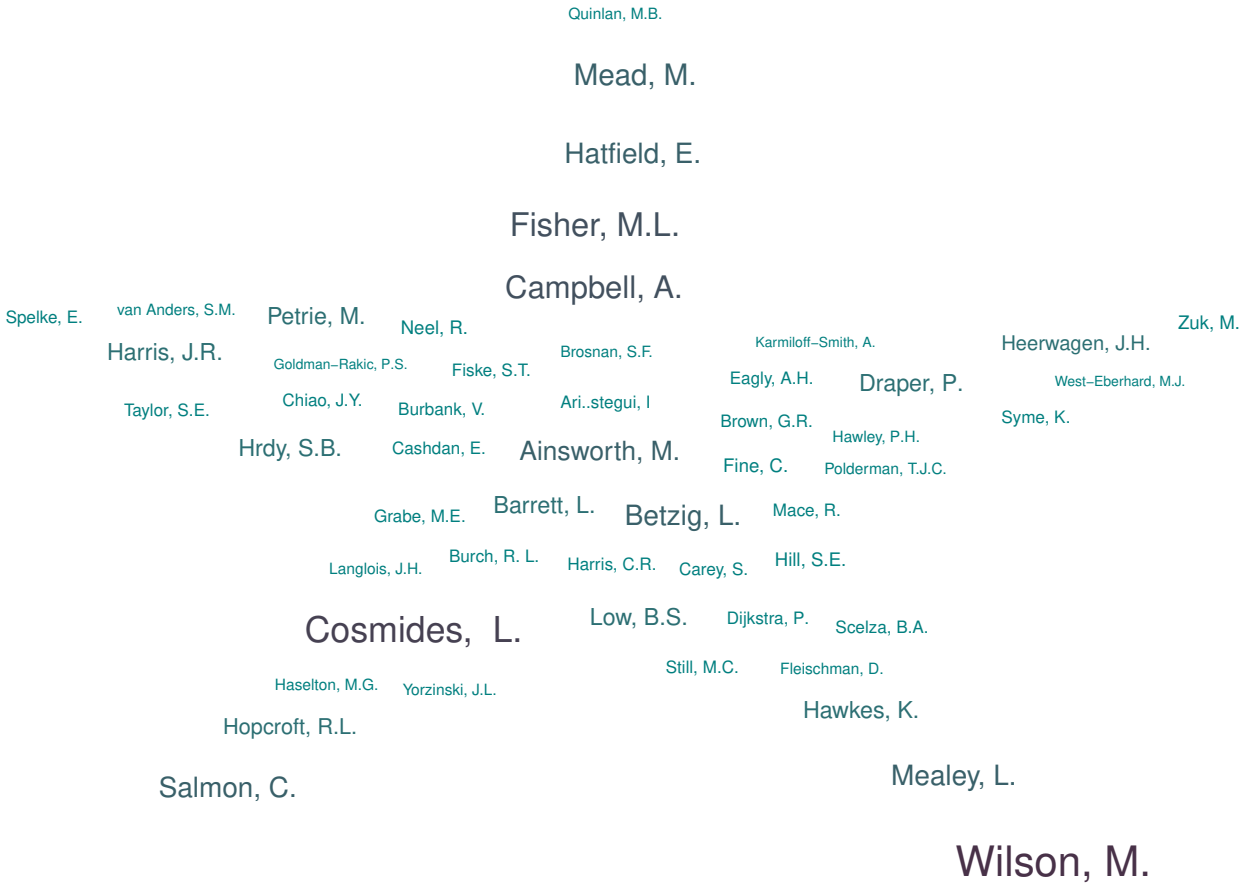

Figure 3. Word cloud illustration of most prominent women. Size of the name as a function of the number of textbooks in which they were indexed. Note not all entries from Table 1 are shown.

Proportion of women as contributors to edited volumes

Five books were edited volumes. There were 257 unique contributors, of which 100 were women. There were 11 authors (4 women) contributing to more than one chapter within a volume. The pooled random effect estimate showed that around 4 in 10 contributors were women, 38.25%, 95%CI [28.41%; 49.16%; Figure 4]. Welling and Shackelford (2020) stood out as having substantially more women contributors than other textbooks, 59.65%, 95% CI [46.68%; 71.40%]. Excluding this volume leads to an estimate

of 1 in 3 contributors being women, 33.00%, 95%CI [26.84%; 39.81%].

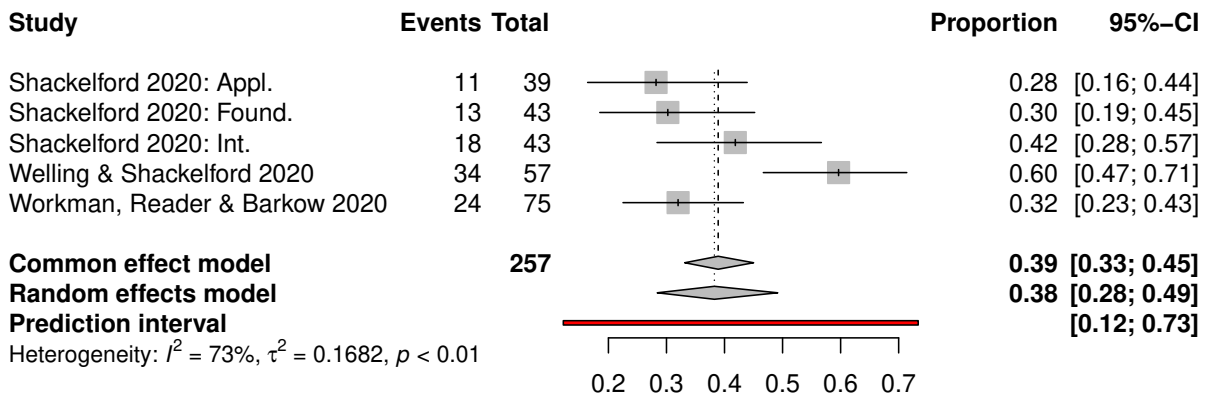

Figure 4. Forest plot of proportions of women contributors to edited volumes ('events' are women contributing). The tips of the diamond present the 95% CI for the effect size estimates, the red bar interval represents the prediction interval.

Discussion and conclusion

We examined the proportion of women represented within seven major recent evolutionary psychology textbooks or reference works. Across all volumes, we found that around 1 in 4 author entries in the indexes were female. However, it should be noted that there is considerable heterogeneity, with one textbook in particular standing out in its inclusion of a greater proportion of women in the index. In addition, we found that, for the examined edited volumes, approximately 4 out of 10 contributors were women. Although we should note that here was one volume which contributed strongly to this estimate with approximately 6 out of 10 contributors being female. If we drop this volume, the estimate of female contributors drops to 1 in 3.

Our data do not speak to the potential mechanisms that lead to fewer women being represented in textbooks and whether this constitutes evidence for discrimination against women. Our results could indicate the presence of a citation bias, with outputs of female

authors less cited than those by men (e.g., Chatterjee & Werner, 2021). This could occur upstream of the citation process (e.g., differential retention) or during the citation process, and be either explicit or implicit. However, it could also be argued that there are simply fewer women to cite. For example, Schmitt (2015) suggested that the proportion of women cited in a paper on evolutionary psychology and feminism (Buss & Schmitt, 2011) was sociohistorically appropriate, as this value of 37.2% mirrored the percentage of female authors at the Human Behavior and Evolution Society meeting of 2013 (Meredith, 2013). Similarly, a recent survey among scholars in 'Evolutionary Human Science' reported that 38.1% ($n = 579$) were women (Kruger et al., 2022). Those numbers are similar to our results regarding the proportion of female contributors, although higher than the proportion of women indexed in the textbooks (25%). The underrepresentation of female authors could also reflect a historical (rather than contemporary) gender bias. Historically, evolutionary psychology and related scientific fields (Sociobiology, Ethology, Evolutionary Biology) have been male-dominated fields. More generally, as noted above, women were systematically excluded from higher education and research opportunities, resulting in fewer women contributing to foundational research and theories that are often cited in textbooks. When science as an institution historically has been biased against members of the female sex, with limited opportunities for women to receive an academic training: in the UK, for example, the University of London admitted its first female students ("the London Nine") only in 1868– 156 years ago–while Oxford did not award degrees to women until 1920, and Cambridge did not do until the late 1940s (Carter, 2018; Delap & Griffin, 2020; University of Oxford, 2024). In part, then, our interest stems from whether these historical limitations on women's opportunities might still play out in some or other way in the current scientific literature. Even today, various paths could lead to bias against women (Greska, 2023). For example, women could be less likely to survive and thrive in the field of evolution and human behaviour (as in biology, e.g. Sheltzer & Smith, 2014), and could be more likely to leave the field. Women could also apply for less funding than

men (Hechtman et al., 2018), be less able to travel to international meetings, or produce fewer outputs than men (Addessi, Borgi & Palagi, 2012).

What is the relevance of this study to the field if the data do not allow (causal) inferences about bias? We argue that, even at a descriptive level, the data tell us something about the representation of women, which is valuable in and of itself, given that textbooks shape the perception that a discipline is open to 'people like me' (e.g., Good, Woodzicka & Wingfield, 2010; Wood et al., 2020). As such, any obvious bias might lead women to decide that evolutionary psychology (or research) is not for them. Textbooks are generally encountered in the early stages of a career, and may therefore have a disproportionate and longstanding influence on people's perceptions of their belonging in a discipline. This last point remains an empirical question, and will likely depends on the way scientists are featured in textbooks (e.g., inclusion of pictures or pronouns).

Limitations

In addition to the limitations already mentioned, such as the degree to which these books are assigned as readings, there are several others that we need to consider. First, we examined only seven recent textbooks or reference works. Of these, only one volume was co-edited by a woman, and this was the one with higher proportions of women in terms of both contributors and index entries. As we have only this single example, however, this has limited analytic value. Another issue is that the books we selected represent a non-independent sample, given that, one author, Shackelford, is an editor of four of the volumes, Workman and Reader are also editors for two volumes. The books selected are also not a homogeneous set, they cover some texts which are more likely to be used as a textbook for study than others. Another consideration is that two of the books, Buss (2019) and Workman and Reader (2021), have multiple editions and may have undergone limited updating since their inception. The sample we used limits the degree to which our findings can be generalised.

Second, we are reluctant to recommend an 'ideal' number of women to index. Several potential benchmarks are available, though each should be considered with caution. A value of 50% would indicate authorship parity, but may not be reflective of the underlying proportions of active scholars in the field. By the same token, however, it seems unlikely, however, that this value would be as low as 1 in 3 as we found here. Although we have provided some heuristics for comparison, further reflection and discussion among those active in the field will be necessary to both assess and address potential gender biases.

Third, while our procedures are similar to those of other projects of this nature (Wood et al., 2020), it cannot take into account self-reported gender categories, and coding is an imperfect process where errors can occur. It is therefore possible that we have misclassified the gender of some author(s). We have made the data and analysis publicly available for potential scrutiny and further interrogation.

Finally, our analysis does not cover author ethnicity (e.g., Arif et al., 2021; Berhe et al., 2022) or any characteristics other than gender. Ethnicity and other information may be difficult to recover from indexes. It is possible or even likely that underrepresentation may occur in evolutionary psychology along dimensions other than the binary gender scheme we examined here.

Future directions

To take this work further, any future analysis would benefit from a consideration of the mechanisms by which a gender imbalance could arise, as well as thinking through how any such imbalance could be mitigated. In particular, it is important to investigate whether there is a citation bias, because citation is a proxy of impact, with potential implications for hiring and promotion (Mott & Cockayne, 2017).

However, even without any bias at the citation level, we believe that it would be beneficial to include the work of more women in evolutionary textbooks, given our point

above regarding female students' perceptions of the discipline. Our data show that there are plenty of female scholars one could include and, indeed, one volume revealed a male:female ratio that was much closer to parity (4 out of 10 entries being women, Welling & Shackelford, 2020). Though this might require some additional reflection, we would argue that it is not difficult to include more women in any review of the literature. There are several examples of women who could be more consistently included in the curriculum (e.g., Eva Jablonka, Hanna Kokko, Anne Campbell, Rosemary Grant, Linda Mealey, to name but a few). Perhaps this requires a broader definition of fields relevant to Evolutionary Psychology. However, we also note that, when it comes to its 'core business', for example, sexual selection, textbooks (e.g., Buss, 2019) continue to cite older (albeit classic) work by Robert Trivers (e.g., Trivers, 1972) or Randy Thornhill (e.g., Thornhill, 1980), but ignore more recent and, arguably, more relevant work (given advances in evolutionary biology more generally) by Hanna Kokko (e.g., Kokko & Jennions, 2008; Kokko, Klug & Jennions, 2012).

Individual authors have considerable power for change in this area. Each can assess their own reference lists for bias without the need for institutional change. Mott and Cockayne (2017) argues for a practice called 'conscientious engagement', whereby authors consider who they would like to 'bring along' with them. However, those most likely to take up this practice—which does require time and effort—are those who are already aware of the issue. At the publisher level, it is possible that, for example, citation checks by author gender could move the needle on parity. If journal instructions for authors or reviewers were to highlight a citation check as one of the steps in the writing or review process, would this result in final versions with more balanced reference lists? A potential first step could be the implementation of a check-list, as there is reasonable evidence from other domains that such a practice would work (e.g., patient safety, Thomassen et al., 2014). Again, this would require resources and effort to achieve. In a time when for-profit scientific publishers have been criticised for excessive publication costs (e.g., Beverungen,

Böhm & Land, 2012; Rodrigues Marcio L. & Morel Carlos M., 2016), reference list checks could be a way to differentiate among publishers who claim they provide added value to the dissemination process. Note that we are not claiming here that we should be including women just for the sake of parity. Including citations just based on gender could lead authors to include less relevant work and more broadly this type of balancing could have adverse consequences (e.g., Yoder, 1991). All that we are advocating here is a greater reflexivity when it comes to whom we cite, and we reiterate gender is but one dimension. We believe a checklist might be helpful first step to mitigate the extremes, in a similar way as we curb, for example, excessive self-citation.

Conclusion

This descriptive study assessed the proportion of women researchers who contribute to or are listed in the indexes of evolutionary psychology textbooks or reference works. We found that the proportions of women and men remain far from parity. We consider this to be a first awareness-raising step across the field. Our data do not speak to bias or discrimination, and we are not arguing that parity should be the norm. Rather we believe our paper might serve as a talking point for those who consider writing a textbook or reference work on whom to include, at least with regard to one dimension, whether they are a man or a woman.

Addressing gender bias in the sciences should lead to higher-quality research, as currently, biases may prevent contributions from underrepresented scholars from being included in our knowledge base. Achieving parity is a challenge. Gender bias is entrenched across societies, not just in institutions of knowledge production.

We do not yet know whether ‘real change’ in scientific citation practices is possible. However, this will not be apparent until genuine attempts have been made. We encourage researchers and publishers to consider their roles in these practices and whether they are

satisfied with the status quo.

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