

# Unconscious Bias

## Compilation of Studies

(Compiled by Shoshana Hereld, work-learn student under Dr. Jennifer Love, 2017)

Over the past several decades, research and commentary on unconscious bias has increased dramatically. This document contains various resources on the topic, including studies, training modules, and approaches for combating unconscious bias. This is by no means an exhaustive list, but it should provide a basis for engaging with the topic.

The first set of resources are studies, divided between those focused on academia and those on the general workplace. These two categories are subdivided by type of identity and environment, among other factors. Following the studies is a list of university resources, which includes schools with separate departments, for comparison. Finally, there are more general resources on unconscious bias, including legislation and opinion pieces.

Three important resources to note from those listed below are the [2012 report on gender discrimination in academia](#) from the Council of Canadian Academies, the [public Google Doc on gender bias in academia](#), and the [Project Implicit website](#) which houses the Implicit Association Test (IAT).

Clicking on the name of each item in the index will bring you to the abstract of the study or other relevant information on the link. This additional information is compiled in the order of the table, so the same information appears in multiple places. This repetition is intentional, as it allows the user to view all the relevant information in the same place, e.g. see the abstracts for all studies pertaining to promotion/tenure together. The overlap of information between categories is also intentional, as some documents fit into more than one category. For ease of use, documents were placed in as many categories as applicable, so that in searching for a single characteristic, all applicable studies would be available.

This document focuses on women in academia, and as such, certain categories contain more entries than others. Additionally, some areas -- such as the intersection of gender and STEM fields -- has been well documented, but others such as criminal justice, have not. In compiling this document, I have tried to include a range of studies and resources as unconscious bias touches many different identities and environments. With more time, these smaller sections could be expanded.

# 1) Studies

## a) Academia

*(See also the open, public google doc annotated bibliography of gender bias in academia:  
<https://docs.google.com/document/d/1QRcQU4RSizlu-HxDY2uZxYp4EmYslmvm9BMtcd-RUis/edit>)*

### i) Stage of Career

#### (1) Promotion/Tenure

- (a) [Carnes et al. ND 2015](#)
- (b) [Corrice 2009](#)
- (c) [Council of Canadian Academies 2012](#)
- (d) [Ewing, Stukas Jr., and Sheehan 2003](#)
- (e) [Gasser and Shaffer 2014](#)
- (f) [Jones et al. 2014](#)
- (g) [Milkman, Akinola, and Chugh 2012](#)
- (h) [Milkman, Akinola, and Chugh 2014](#)
- (i) [Miller 2016](#)
- (j) [Monzo and SooHoo 2014](#)
- (k) [Shen 2013](#)
- (l) [Stack 2002](#)
- (m) [Steinpreis, Anders, and Ritzke 1999](#)
- (n) [Trix and Psenka 2003](#)

#### (2) Assistant Professor

- (a) [Carnes et al. ND 2015](#)
- (b) [Corrice 2009](#)
- (c) [Council of Canadian Academies 2012](#)
- (d) [Ewing, Stukas Jr., and Sheehan 2003](#)
- (e) [Gasser and Shaffer 2014](#)
- (f) [Haswell and Haswell 1996](#)
- (g) [Jones et al. 2014](#)

- (h) [Miller 2016](#)
- (i) [Monzo and SooHoo 2014](#)
- (j) [Shen 2013](#)
- (k) [Stack 2002](#)
- (l) [Steinpreis, Anders, and Ritzke 1999](#)
- (m) [Trix and Psenka 2003](#)

**(3) [Post-doctoral](#)**

- (a) [Bornmann, Mutz, Daniel 2009](#)
- (b) [Carnes et al. ND 2015](#)
- (c) [Council of Canadian Academies 2012](#)
- (d) [Gasser and Shaffer 2014](#)
- (e) [Jones et al. 2014](#)
- (f) [Towers 2008](#)
- (g) [Wenneras and Wold 1997](#)

**(4) [Graduate students](#)**

- (a) [Bornmann, Mutz, Daniel 2009](#)
- (b) [Carnes et al. ND 2015](#)
- (c) [Council of Canadian Academies 2012](#)
- (d) [Gasser and Shaffer 2014](#)
- (e) [Jones et al. 2014](#)
- (f) [Kattari 2015](#)
- (g) [Milkman, Akinola, and Chugh 2012](#)
- (h) [Milkman, Akinola, and Chugh 2014](#)

**(5) [Undergraduates](#)**

- (a) [Corcoran, Hundhammer, and Mussweiler 2009](#)
- (b) [Council of Canadian Academies 2012](#)
- (c) [Grunspan et al. 2016](#)
- (d) [Haswell and Haswell 1996](#)
- (e) [Jacoby-Senghor, Sinclair, and Shelton 2016](#)

- (f) [Jones et al. 2014](#)
- (g) [Kattari 2015](#)
- (h) [Kawakami et al. 2000](#)
- (i) [Knobloch-Westerwick, Glynn, and Huge 2013](#)
- (j) [Legault, Gutsell, and Inzlicht 2011](#)
- (k) [Rudman, Ashmore, and Gary 2001](#)
- (l) [Steele and Aronson 1995](#)

**(6) [Lab Manager](#)**

- (a) [Moss-Racusin, Dovidio, Brescoll, Graham, and Handelsman 2012](#)
- (b) [Shen 2013](#)

**ii) [Recognitions](#)**

**(1) [Grant/Award recipients](#)**

- (a) [Bornmann, Mutz, and Daniel 2007](#)
- (b) [Bornmann, Mutz, and Daniel 2009](#)
- (c) [Ledin et al. 2007](#)
- (d) [Lincoln et al. 2012](#)
- (e) [Marsh, Jayasinghe, and Bond 2008](#)
- (f) [RAND 2005](#)
- (g) [Wenneras and Wold 1997](#)

**(2) [Research](#)**

- (a) [Council of Canadian Academies 2012](#)
- (b) [Knobloch-Westerwick and Glynn 2013](#)
- (c) [Stack 2002](#)
- (d) [Towers 2008](#)

**(3) [Conference-related](#)**

- (a) [Jones et al. 2014](#)
- (b) [Knobloch-Westerwick, Glynn, and Huge 2013](#)
- (c) [Towers 2008](#)

**(4) [Publishing](#)**

- (a) [Budden et al. 2008](#)
- (b) [Davenport and Snyder 1995](#)
- (c) [Jagsi et al. 2006](#)
- (d) [Knobloch-Westerwick and Glynn 2013](#)
- (e) [Kretschmer et al. 2012](#)
- (f) [Ledin et al. 2007](#)
- (g) [Lutz 1990](#)
- (h) [McElhinny et al. 2003](#)
- (i) [Stack 2002](#)
- (j) [Towers 2008](#)

**(5) [Leadership](#)**

- (a) [Bornmann, Mutz, and Daniel 2009](#)
- (b) [Carnes et al. ND 2015](#)
- (c) [Council of Canadian Academies 2012](#)
- (d) [Ledin et al. 2007](#)

**iii) [Field](#)**

**(1) [General academia](#)**

- (a) [Council of Canadian Academies 2012](#)
- (b) [Dasgupta and Asgari 2004](#)
- (c) [England 2010](#)
- (d) [Gasser and Shaffer 2014](#)
- (e) [Kattari 2015](#)
- (f) [Ledin et al. 2007](#)
- (g) [Marsh, Jayasinghe, and Bond 2008](#)
- (h) [Milkman, Akinola, and Chugh 2012](#)
- (i) [Milkman, Akinola, and Chugh 2014](#)
- (j) [Miller 2016](#)
- (k) [Monzo and SooHoo 2014](#)
- (l) [RAND 2005](#)

(m) [Shields, Zawadzki, and Johnson 2011](#)

(n) [Steele and Aronson 1995](#)

(o) [Valian 2005](#)

**(2) [Anthropology/Sociology/Linguistics](#)**

(a) [Davenport and Snyder 1995](#)

(b) [Lutz 1990](#)

(c) [McElhinny et al. 2003](#)

**(3) [Biology](#)**

(a) [Budden et al. 2008](#)

(b) [Grunspan et al. 2016](#)

(c) [Jones et al. 2014](#)

(d) [Ledin et al. 2007](#)

(e) [Moss-Racusin et al. 2012](#)

**(4) [Biomed/Medicine](#)**

(a) [Carnes et al. ND 2015](#)

(b) [Carnes et al. Feb. 2015](#)

(c) [Corrice 2009](#)

(d) [Jagsi et al. 2006](#)

(e) [Lincoln et al. 2012](#)

(f) [Trix and Psenka 2003](#)

(g) [Wenneras and Wold 1997](#)

**(5) [Chemistry](#)**

(a) [Moss-Racusin et al. 2012](#)

**(6) [Communications](#)**

(a) [Knobloch-Westerwick and Glynn 2013](#)

(b) [Knobloch-Westerwick, Glynn, and Huge 2013](#)

**(7) [Criminal Justice](#)**

(a) [Stack 2002](#)

**(8) [Ecology](#)**

(a) [Budden et al. 2008](#)

**(9) [Engineering](#)**

(a) [Carnes et al. Feb. 2015](#)

**(10) [Gender/Race/Conflict Studies](#)**

(a) [Kretschmer et al. 2012](#)

(b) [Rudman, Ashmore, and Gary 2001 \(Conflict and Prejudice Studies\)](#)

**(11) [Math](#)**

(a) [Lincoln et al. 2012](#)

**(12) [Philosophy](#)**

(a) [Haswell and Haswell 1996](#)

**(13) [Physics](#)**

(a) [Moss-Racusin et al. 2012](#)

(b) [Towers 2008](#)

**(14) [Psychology](#)**

(a) [Ewing, Stukas Jr., and Sheehan 2003](#)

(b) [Steinpreis, Anders, and Ritzke 1999](#)

**(15) [Science/STEM](#)**

(a) [Carnes, et al. Feb. 2015](#)

(b) [Easterly and Ricard 2011](#)

(c) [Lincoln et al. 2012](#)

(d) [Rossiter 1993](#)

(e) [Shen 2013](#)

**iv) [UB Subject](#)**

**(1) [IAT and Related Testing](#)**

(a) [Carnes et al. ND 2015](#)

(b) [Carnes et al. Feb. 2015](#)

(c) [Corrice 2009](#)

(d) [Kawakami et al. 2000](#)

(e) [Legault, Gutsell, and Inzlicht 2011](#)

(f) [Rudman, Ashmore, and Gary 2001](#)

**(2) [Stereotyping](#)**

(a) [Corcoran, Hundhammer, and Mussweiler 2009](#)

(b) [Council of Canadian Academies 2012](#)

(c) [Kawakami et al. 2000](#)

(d) [Steele and Aronson 1995](#)

**(3) [Improvements Through Training](#)**

(a) [Carnes et al. ND 2015](#)

(b) [Carnes et al. Feb. 2015](#)

(c) [Dasgupta and Asgari 2004](#)

(d) [Isaac, Lee, and Carnes 2009](#)

(e) [Kawakami et al. 2000](#)

**(4) [Improvements Through Other Means](#)**

(a) [Budden et al. 2008](#)

(b) [Corcoran, Hundhammer, and Mussweiler 2009](#)

(c) [Council of Canadian Academies 2012](#)

(d) [Legault, Gutsell, and Inzlicht 2011](#)

(e) [Marsh, Jayasinghe, and Bond 2008](#)

(f) [Rudman, Ashmore, and Gary 2001](#)

(g) [Valian 2005](#)

**v) [Identity](#)**

**(1) [Gender](#)**

(a) [Bornmann, Mutz, and Daniel 2007](#)

(b) [Bornmann, Mutz, and Daniel 2009](#)

(c) [Budden et al. 2008](#)

(d) [Carnes et al. ND 2015](#)

(e) [Carnes et al. Feb. 2015](#)

(f) [Corcoran, Hundhammer, and Mussweiler 2009](#)

(g) [Corrice 2009](#)



- (h) [Council of Canadian Academies 2012](#)
- (i) [Dasgupta and Asgari 2004](#)
- (j) [Davenport and Snyder 1995](#)
- (k) [Easterly and Ricard 2011](#)
- (l) [England 2010](#)
- (m) [Ewing, Stukas Jr., and Sheehan 2003](#)
- (n) [Gasser and Shaffer 2014](#)
- (o) [Grunspan et al. 2016](#)
- (p) [Haswell and Haswell 1996](#)
- (q) [Isaac, Lee, and Carnes 2009](#)
- (r) [Jagsi et al. 2006](#)
- (s) [Jones et al. 2014](#)
- (t) [Knobloch-Westerwick and Glynn 2013](#)
- (u) [Knobloch-Westerwick, Glynn, and Huge 2013](#)
- (v) [Kretschmer et al. 2012](#)
- (w) [Ledin et al. 2007](#)
- (x) [Lincoln et al. 2012](#)
- (y) [Lutz 1990](#)
- (z) [Marsh, Jayasinghe, and Bond 2008](#)
- (aa) [McElhinny et al. 2003](#)
- (bb) [Milkman, Akinola, and Chugh 2012](#)
- (cc) [Milkman, Akinola, and Chugh 2014](#)
- (dd) [Monzo and SooHoo 2014](#)
- (ee) [Moss-Racusin, Dovidio, Brescoll, Graham, and Handelsman 2012](#)
- (ff) [RAND 2005](#)
- (gg) [Rossiter 1993](#)
- (hh) [Shen 2013](#)
- (ii) [Shields, Zawadzki, and Johnson 2011](#)
- (jj) [Stack 2002](#)

(kk) [Steinpreis, Anders, and Ritzke 1999](#)

(ll) [Towers 2008](#)

(mm) [Trix and Psenka 2003](#)

(nn) [Valian 2005](#)

(oo) [Wenneras and Wold 1997](#)

**(2) [Marriage](#)**

(a) [Ledin et al. 2007](#)

**(3) [Parenting](#)**

(a) [Council of Canadian Academies 2012](#)

(b) [Ledin et al. 2007](#)

**(4) [Race/Ethnicity](#)**

(a) [Corrice 2009](#)

(b) [Jacoby-Senghor, Sinclair, and Shelton 2016](#)

(c) [Kawakami et al. 2000](#)

(d) [Legault, Gutsell, and Inzlicht 2011](#)

(e) [Milkman, Akinola, and Chugh 2012](#)

(f) [Milkman, Akinola, and Chugh 2014](#)

(g) [Miller 2016](#)

(h) [Monzo and SooHoo 2014](#)

(i) [Rudman, Ashmore, and Gary 2001](#)

(j) [Steele and Aronson 1995](#)

**(5) [Ability](#)**

(a) [Kattari 2015](#)

**(6) [Sexuality](#)**

(a) [Ewing, Stukas Jr., and Sheehan 2003](#)

**(7) [Age](#)**

(a) [Kawakami et al. 2000](#)

(b) [Marsh, Jayasinghe, and Bond 2008](#)

**(8) [Education/Class](#)**

- (a) [England 2010](#)
- (b) [Marsh, Jayasinghe, and Bond 2008](#)

## **vi) Type of document**

### **(1) Study**

- (a) [Bornmann, Mutz, and Daniel 2009](#)
- (b) [Budden et al. 2008](#)
- (c) [Carnes et al. ND 2015](#)
- (d) [Carnes et al. Feb. 2015](#)
- (e) [Corcoran, Hundhammer, and Mussweiler 2009](#)
- (f) [Dasgupta and Asgari 2004](#)
- (g) [Ewing, Stukas Jr., and Sheehan 2003](#)
- (h) [Grunspan et al. 2016](#)
- (i) [Haswell and Haswell 1996](#)
- (j) [Jacoby-Senghor, Sinclair, and Shelton 2016](#)
- (k) [Kawakami et al. 2000](#)
- (l) [Knobloch-Westerwick, Glynn, and Huge 2013](#)
- (m) [Legault, Gutsell, and Inzlicht 2011](#)
- (n) [Milkman, Akinola, and Chugh 2012](#)
- (o) [Milkman, Akinola, and Chugh 2014](#)
- (p) [Moss-Racusin, Dovidio, Brescoll, Graham, and Handelsman 2012](#)
- (q) [Rudman, Ashmore, and Gary 2001](#)
- (r) [Shields, Zawadzki, and Johnson 2011](#)
- (s) [Steele and Aronson 1995](#)
- (t) [Steinpreis, Anders, and Ritzke 1999](#)
- (u) [Towers 2008](#)
- (v) [Trix and Psenka 2003](#)
- (w) [Wenneras and Wold 1997](#)

### **(2) Statistical study**

- (a) [Bornmann, Mutz, Daniel 2007](#)

- (b) [Council of Canadian Academies 2012](#)
- (c) [Davenport and Snyder 1995](#)
- (d) [Gasser and Shaffer 2014](#)
- (e) [Jagsi et al. 2006](#)
- (f) [Jones et al. 2014](#)
- (g) [Knobloch-Westerwick and Glynn 2013](#)
- (h) [Kretschmer et al. 2012](#)
- (i) [Ledin et al. 2007](#)
- (j) [Lincoln et al. 2012](#)
- (k) [Lutz 1990](#)
- (l) [RAND 2005](#)
- (m) [Stack 2002](#)

**(3) [Literature Review/Research Compilation](#)**

- (a) [Corrice 2009](#)
- (b) [Easterly and Ricard 2011](#)
- (c) [Gasser and Shaffer 2014](#)
- (d) [Isaac, Lee, and Carnes 2009](#)
- (e) [Marsh, Jayasinghe, and Bond 2008](#)
- (f) [McElhinny et al. 2003](#)
- (g) [Shen 2013](#)
- (h) [Valian 2005](#)

**(4) [Article/Essay](#)**

- (a) [England 2010](#)
- (b) [Kattari 2015](#)
- (c) [Rossiter 1993](#)

**(5) [Record of Experiences](#)**

- (a) [Miller 2016](#)
- (b) [Monzo and SooHoo 2014](#)

## **b) General Workforce**

### **i) Subject**

#### **(1) Hiring**

- (a) [Bertrand and Mullainathan 2003](#)
- (b) [Booth, Leigh, and Varganova 2010](#)
- (c) [Carlsson and Rooth 2007](#)
- (d) [Catalyst 2007](#)
- (e) [Collins 2007](#)
- (f) [Correll, Benard, and Paik 2007](#)
- (g) [Daguid and Thomas-Hunt 2015](#)
- (h) [England 2010](#)
- (i) [Goldin and Rouse 2000](#)
- (j) [Heilman and Okimoto 2008](#)
- (k) [Phelan, Moss-Racusin, and Rudman 2008](#)

#### **(2) Wage Gap**

- (a) [Budig and England 2001](#)
- (b) [Cha and Weeden 2014](#)
- (c) [Levanon, England, and Allison 2009](#)
- (d) [O'Reilly, Smith, Deakin, and Burchell 2015](#)
- (e) [Rubery and Grimshaw 2014](#)
- (f) [Shen 2013](#)

#### **(3) Work Competence**

- (a) [Heilman and Hayes 2005](#)

#### **(4) Working Hours**

- (a) [Cha and Weeden 2014](#)
- (b) [Goldin 2014](#)

#### **(5) Leadership/Promotion**

- (a) [Catalyst 2007](#)

- (b) [Dasgupta and Asgari 2004](#)
- (c) [Eagly and Karau 2009](#)
- (d) [England 2010](#)
- (e) [Heilman and Hayes 2005](#)
- (f) [Heilman and Okimoto 2007](#)
- (g) [Heilman and Okimoto 2008](#)
- (h) [Long 2014](#)
- (i) [Phelan, Moss-Racusin, and Rudman 2008](#)

**(6) [Competition](#)**

- (a) [Niederle and Vesterlund 2007](#)

**ii) [Identity](#)**

**(1) [Gender](#)**

- (a) [Budig and England 2001](#)
- (b) [Carlsson and Rooth 2007](#)
- (c) [Catalyst 2007](#)
- (d) [Cha and Weeden 2014](#)
- (e) [Correll, Benard, and Paik 2007](#)
- (f) [Daguid and Thomas-Hunt 2015](#)
- (g) [Dasgupta and Asgari 2004](#)
- (h) [Eagly and Karau 2009](#)
- (i) [England 2010](#)
- (j) [Goldin 2014](#)
- (k) [Goldin and Rouse 2000](#)
- (l) [Heilman and Hayes 2005](#)
- (m) [Heilman and Okimoto 2007](#)
- (n) [Heilman and Okimoto 2008](#)
- (o) [Levanon, England, and Allison 2009](#)
- (p) [Long 2014](#)
- (q) [Niederle and Vesterlund 2007](#)

- (r) [O'Reilly, Smith, Deakin, and Burchell 2015](#)
- (s) [Phelan, Moss-Racusin, and Rudman 2008](#)
- (t) [Shen 2013](#)

**(2) [Marriage](#)**

- (a) [Budig and England 2001](#)

**(3) [Parenting](#)**

- (a) [Budig and England 2001](#)
- (b) [Correll, Benard, and Paik 2007](#)
- (c) [Heilman and Okimoto 2008](#)
- (d) [O'Reilly, Smith, Deakin, and Burchell 2015](#)

**(4) [Race/Ethnicity](#)**

- (a) [Bertrand and Mullainathan 2003](#)
- (b) [Booth, Leigh, and Varganova 2010](#)
- (c) [Budig and England 2001](#)
- (d) [Carlsson and Rooth 2007](#)
- (e) [Collins 2007](#)

**(5) [Size](#)**

- (a) [Daguid and Thomas-Hunt 2015](#)

**(6) [Age](#)**

- (a) [Daguid and Thomas-Hunt 2015](#)

**(7) [Education/Class](#)**

- (a) [Budig and England 2001](#)
- (b) [England 2010](#)

**iii) [UB Subject](#)**

**(1) [IAT](#)**

- (a) [Greenwald and Krieger 2006](#)
- (b) [Jost et al. 2009](#)

**(2) [Stereotyping](#)**

- (a) [Catalyst 2007](#)

(b) [Daguid and Thomas-Hunt 2015](#)

(c) [Heilman and Hayes 2005](#)

**(3) [Improvements Through Training](#)**

(a) [Dasgupta and Asgari 2004](#)

**(4) [Improvements Through Other Means](#)**

(a) [Collins 2007](#)

(b) [Goldin 2014](#)

(c) [Greenwald and Krieger 2006](#)

**iv) [Type of document](#)**

**(1) [Study](#)**

(a) [Bertrand and Mullainathan 2003](#)

(b) [Booth, Leigh, and Varganova 2010](#)

(c) [Budig and England 2001](#)

(d) [Carlsson and Rooth 2007](#)

(e) [Correll, Benard, and Paik 2007](#)

(f) [Daguid and Thomas-Hunt 2015](#)

(g) [Dasgupta and Asgari 2004](#)

(h) [Eagly and Karau 2009](#)

(i) [Goldin and Rouse 2000](#)

(j) [Heilman and Hayes 2005](#)

(k) [Heilman and Okimoto 2007](#)

(l) [Heilman and Okimoto 2008](#)

(m) [Niederle and Vesterlund 2007](#)

(n) [Phelan, Moss-Racusin, and Rudman 2008](#)

**(2) [Statistical study](#)**

(a) [Budig and England 2001](#)

(b) [Cha and Weeden 2014](#)

(c) [Levanon, England, and Allison 2009](#)

**(3) [Literature Review/Research Compilation](#)**



- (a) [Catalyst 2007](#)
- (b) [Jost et al. 2009](#)
- (c) [Long 2014](#)
- (d) [O'Reilly, Smith, Deakin, and Burchell 2015](#)
- (e) [Rubery and Grimshaw 2014](#)
- (f) [Shen 2013](#)
- (4) [Article/Essay](#)**
  - (a) [Collins 2007](#)
  - (b) [England 2010](#)
  - (c) [Goldin 2014](#)
  - (d) [Greenwald and Krieger 2006](#)
- (5) [Record of Experiences](#)**
  - (a) [Catalyst 2007](#)

## **2) [Resources](#)**

### **a) [University Resources](#)**

#### **i) [Separate department/organization](#)**

- (1) [Harvard University: Project Implicit](#)
- (2) [King's College London: Diversity and Inclusion Office](#)
- (3) [McGill University: Interdisciplinary Research Network on Discrimination and Inclusion](#)
- (4) [Ohio State University: Kirwan Institute for the Study of Race and Ethnicity](#)
- (5) [Rutgers University: Women of Color Scholars program](#)
- (6) [Ryerson University: Rutgers English Diversity Institute \(REDI\)](#)
- (7) [Stanford University: Center for the Advancement of Women's Leadership](#)
- (8) [Texas A&M University: Advance Center](#)
- (9) [University of California, San Francisco: Diversity and Outreach Office](#)
- (10) [University of Manchester: Equality and Diversity Office](#)
- (11) [University of Michigan: Center for the Education of Women](#)

#### **ii) [Academic Resources Unaffiliated with Universities](#)**

- (1) [American Association of University Women](#)
- (2) [Equity Challenge Unit](#)
- (3) [Implicit Bias & Philosophy International Research Project](#)
- (4) [National Center for Faculty Diversity and Development](#)

### **iii) Literature**

- (1) [AAUW: \*Solving the Equation: The Variables for Women's Success in Engineering and Computing\*](#)
- (2) [APA guide for women and minorities: \*Surviving and Thriving in Academia\*](#)
- (3) [ECU: \*Unconscious Bias and Higher Education\*](#)
- (4) [McGill University: Bibliography on law-related implicit bias](#)
- (5) [Ohio State University: \*State of the Science: Implicit Bias Review 2016\*](#)
- (6) [Robyn Magalit Rodriguez \(UC Davis\): \*Resources for Women of Color Faculty\*](#)
- (7) [Stanford University: Encyclopedia of Philosophy entry on implicit bias](#)
- (8) [University of Toronto: \*Gender Equity and Pathways to Leadership\*](#)
- (9) [University of Wisconsin: \*Reviewing Applicants: Research on Bias and Assumptions\*](#)

### **iv) Training**

- (1) [AAMC: \*What You Don't Know: The Science of Unconscious Bias and What To Do About it in the Search and Recruitment Process\* \(free online seminar\)](#)
- (2) [Harvard University: Project Implicit](#)
- (3) [King's College London: Diversity and Inclusion Office](#)
- (4) [University of California, San Francisco: Diversity and Outreach Office](#)
- (5) [University of Manchester: Equality and Diversity Office](#)

### **v) Miscellaneous**

- (1) [Lack of hiring of faculty of color \(blog post\)](#)
- (2) [Life in academia for POCs \(blog\)](#)
- (3) [Writing a diversity statement \(blog post\)](#)

## **b) Other Resources**

### **i) Legislation**

- (1) [CRC guidelines to reduce bias in recommendation letters \(Canada\)](#)
- (2) [Fact Sheet \(USA\)](#)
- (3) [Programme for Women Professors \(Germany\)](#)
- (4) [Title IX \(USA\)](#)

## ii) [Organizations](#)

- (1) [Center for American Progress](#)
- (2) [Google](#)

## iii) [Training](#)

- (1) [Google](#)

## iv) [Studies and Literature](#)

- (1) [Annotated bibliography of gender bias studies in academia \(open, public Google Doc\)](#)
- (2) [CDO Insights – Diversity Best Practices: \*Proven Strategies to Addressing Unconscious Bias in the Workplace\*](#)
- (3) [Council of Canadian Academies 2012](#)
- (4) [Google](#)
- (5) [Greenwald and Krieger 2006](#)
- (6) [Jost et al. 2009](#)

# Summary and Links: Studies

## 1. Academia

*N.B. All quoted material is taken from the abstract of the article in question.*

### Stage of Career

#### Promotion/Tenure

Carnes, Bartels, Kaatz, and Kolehmainen 2015

[“Why is John More Likely to Become Department Chair Than Jennifer?”](#) *Transactions of the American Clinical and Climatological Association*, ND 2015. Vol. 126, pg. 197-214.

Gender bias in medical school and its effects on experience and leadership

“This article reviews some of our research on how gender stereotypes and their accompanying assumptions and expectations can influence the careers of male and female physicians and scientists in a myriad of subtle ways. Although stereotype-based cognitive biases may be invisible and unintentional, they nevertheless shape the experiences of women in academic medicine in ways that frequently constrain their opportunities. We present research on the following: 1) subtle differences in the evaluation of male and female medical students as revealed through text analysis of written evaluations at a critical career juncture, 2) how cultural assumptions about the way men and women should and should not behave influence medical residents’ experiences as leaders, and 3) how approaching gender bias among faculty in academic medicine, science, and engineering as a remedial habit can be successful in changing individual behaviors and in improving department climate.”

#### **Corrice 2009**

[“Unconscious bias in faculty and leadership recruitment: A literature review”](#) *Association of American Medical Colleges Analysis in Brief*, 2009. Vol. 9.2.

“Although women and minorities have made significant strides in achieving equality in the workplace, they are still underrepresented in the upper strata of organizations, including senior faculty and leadership positions at medical schools and teaching hospitals. Within the last decade, social science researchers have pursued the theory of “unconscious bias” as one barrier to workplace equality that may persist despite a general commitment to increase diversity across the academic medicine workforce and other organizations. This Analysis in Brief reviews the scientific literature on the theory of unconscious bias, explores the role of unconscious bias in job recruitment and evaluations, and offers suggestions for search committees and others involved in hiring decisions at medical schools and teaching hospitals.”

#### **Council of Canadian Academies 2012**

[“Strengthening Canada’s Research Capacity: The Gender Dimension – The Expert Panel on Women in University Research”](#). 2012.

“Question: What policies and what societal, cultural, and institutional, economic, and/or other relevant factors influence the career trajectory of women researchers in Canadian universities and underlie gender disparities observed in Canadian university researcher’s statistical profile, by discipline area, rank, duty/position/stature, salary, tenure, research funding and or/any other relevant indicators?”

“The major findings from the statistical profile are:

In general, the Canadian profile is similar to that of other economically advanced nations.

Women’s progress in Canadian universities is uneven and dependent on discipline and rank.

The higher the rank, the lower the percentage of women in comparison to men.

The key factors determined by the Panel that impact the career paths of women start early in life with stereotypes that define roles and expectations, followed by a lack of knowledge about requisites for potential career paths, and a lack of role models and mentors. These issues, combined with a rigid tenure track structure, challenges associated with the paid work-family life balance, and the importance of increased support and coordination amongst governments and institutions should be examined if Canada is going to achieve a greater gender balance within academia.”

### **Ewing, Stukas Jr., and Sheehan 2003**

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“The authors examined whether gay men and lesbians are evaluated more negatively than individuals of unspecified sexual orientation when attributional ambiguity surrounds evaluations and whether they are evaluated similarly to unspecified others when no attributional ambiguity is present. One male and one female lecturer delivered either a strong or a weak lecture to students who either (a) believed that the lecturer was a gay man or a lesbian or (b) did not receive sexual orientation information. Contrary to predictions, the quality of the lecture did not influence the ratings of known gay male and lesbian lecturers, although lecture quality strongly influenced ratings of lecturers whose sexual orientation was unspecified. After strong lectures, participants rated known gay male and lesbian lecturers more negatively than they did lecturers whose sexual orientation was unspecified. After weak lectures, participants rated known gay male and lesbian lecturers more positively than they did the others. The authors discussed the possibility that students might moderate their ratings to avoid discriminating against gay and lesbian lecturers.”

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Conference presentations demonstrate the impacts of gender bias and visibility in evolutionary biology.

"Women continue to be under-represented in the sciences, with their representation declining at each progressive academic level. These differences persist despite long-running policies to ameliorate gender inequity. We compared gender differences in exposure and visibility at an evolutionary biology conference for attendees at two different academic levels: student and post-PhD academic. Despite there being almost exactly a 1:1 ratio of women and men attending the conference, we found that when considering only those who presented talks, women spoke for far less time than men of an equivalent academic level: on average student women presented for 23% less time than student men, and academic women presented for 17% less time than academic men. We conducted more detailed analyses to tease apart whether this gender difference was caused by decisions made by the attendees or through bias in evaluation of the abstracts. At both academic levels, women and men were equally likely to request a presentation. However, women were more likely than men to prefer a short talk, regardless of academic level. We discuss potential underlying reasons for this gender bias, and provide recommendations to avoid similar gender biases at future conferences."

**Milkman, Akinola, and Chugh 2012**

["Temporal Distance and Discrimination: An Audit Study in Academia"](https://doi.org/10.1177/0956797611434539). *Psychological Science*, 2012. Pg. 1-8. Doi: <https://doi.org/10.1177/0956797611434539>

Discrimination against women and minorities by professors when planning meetings

"Through a field experiment set in academia (with a sample of 6,548 professors), we found that decisions about distant-future events were more likely to generate discrimination against women and minorities (relative to Caucasian males) than were decisions about near-future events. In our study, faculty members received e-mails from fictional prospective doctoral students seeking to schedule a meeting either that day or in 1 week; students' names signaled their race (Caucasian, African American, Hispanic, Indian, or Chinese) and gender. When the requests were to meet in 1 week, Caucasian males were granted access to faculty members 26% more often than were women and minorities; also, compared with women and minorities, Caucasian males received more and faster responses. However, these patterns were essentially eliminated when prospective students requested a meeting that same day. Our identification of a temporal discrimination effect is consistent with the predictions of construal-level theory and implies that subtle contextual shifts can alter patterns of race- and gender-based discrimination."

**Milkman, Akinola, and Chugh 2014**

[“What Happens Before? A Field Experiment Exploring How Pay and Representation Differentially Shape Bias on the Pathway into Organizations”](https://doi.org/10.2139/ssrn.2063742). *Journal of Applied Psychology*, 2014. Doi: <http://dx.doi.org/10.2139/ssrn.2063742>

Faculty responses to students discussing research opportunities were biased in favor of white males above all other categories

“Little is known about how discrimination manifests before individuals formally apply to organizations or how it varies within and between organizations. We address this knowledge gap through an audit study in academia of over 6,500 professors at top U.S. universities drawn from 89 disciplines and 259 institutions. In our experiment, professors were contacted by fictional prospective students seeking to discuss research opportunities prior to applying to a doctoral program. Names of students were randomly assigned to signal gender and race (Caucasian, Black, Hispanic, Indian, Chinese), but messages were otherwise identical. We hypothesized that discrimination would appear at the informal “pathway” preceding entry to academia and would vary by discipline and university as a function of faculty representation and pay. We found that when considering requests from prospective students seeking mentoring in the future, faculty were significantly more responsive to Caucasian males than to all other categories of students, collectively, particularly in higher-paying disciplines and private institutions. Counterintuitively, the representation of women and minorities and discrimination were uncorrelated, a finding that suggests greater representation cannot be assumed to reduce discrimination. This research highlights the importance of studying decisions made before formal entry points into organizations and reveals that discrimination is not evenly distributed within and between organizations.”

#### **Miller 2016**

[“‘White sanction’, institutional, group and individual interaction in the promotion and progression of black and minority ethnic academics and teachers in England”](https://doi.org/10.1177/1757743816672880). *Power and Education*, 2016. Pg. 1-17. Doi: <https://doi.org/10.1177/1757743816672880>

Black and minority ethnic experiences in academia, and the perceived need for “white sanction”

“The promotion and progression of black and minority ethnic academics and teachers in England has been the subject of much debate. Although several theories have been put forward, racial equality has stood out as a major contributing factor. The experiences of black and minority ethnic academics and teachers in England are similar in terms of aspirations, and their experience of organisations also points to similar patterns of exclusions. This integrated study provides thick data from qualitative interviews with academics and teachers, theorised through the lens of whiteness theory and social identity theory, of their experience of promotion and progression, how they feel organisations respond to them and how they, in turn, are responding to promotion and progression challenges. There was a shared view amongst the participants that, for black and minority ethnic academics and teachers to progress in England, they need ‘white sanction’ – a form of endorsement from white colleagues that in itself has an enabling power.”

#### **Monzo and SooHoo 2014**

[“Translating the Academy: Learning the Racialized Languages of Academia”](#). *Journal of Diversity in Higher Education*, 2014. Vol. 7.3, pg. 147-165. Doi: <http://dx.doi.org/10.1037/a0037400>

Experiences of two women of color in academia

“This article presents narratives of 2 women faculty of color, 1 early career Latina and the other tenured Asian American woman, regarding their ontological and epistemological struggles in academia, as well as the hope, impetus, and strategies for change that they constructed together. Drawing on a critical pedagogy perspective, mentoring is discussed as a praxis of allyship that develops organically within relationships that recognize each person’s strengths, provides instrumental knowledge about the academy, provides intellectual stimulation and reciprocal reflection, and is a collaborative endeavor that helps them to resist erasure and insert visibly diverse knowledge systems into people’s academic pursuits and responsibilities.”

### **Shen 2013**

[“Inequality quantified: Mind the gender gap”](#). *Nature*, 2013. Vol. 495, pg. 22-24. Doi: <https://doi.org/10.1038/495022a>

Gender gap in the sciences

“Female scientists have made steady gains in recent decades but they face persistent career challenges. US universities and colleges employ far more male scientists than female ones and men earn significantly more in science occupations.”

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[“Gender and Scholarly Productivity: The case of criminal justice”](#). *Journal of Criminal Justice*, 2002. Vol. 30, pg. 175-182. Doi: [http://dx.doi.org/10.1016/S0047-2352\(01\)00134-9](http://dx.doi.org/10.1016/S0047-2352(01)00134-9)

Factors limiting female publishing in the field of criminal justice

“Research on scholarly productivity in science has consistently found that women scientists publish only 50–60 percent as many scholarly papers as men. Common limitations of this work include a focus on the hard sciences to the neglect of other fields and lack of controls for type of location or employment. This study contributed to the literature by investigating a soft science (criminal justice) and focusing on a particular location: scientists in tenure track, academic positions. Further, it was contended that females were more integrated into the male research networks in criminal justice than in the hard sciences. This greater integration should narrow the gap between male and female productivity. Data were based on eighty-nine faculty in Master's-level criminal justice departments. The results of a multiple regression analysis indicated that gender was not significantly associated with either the number of articles or the impact (citations) of scholarly work. The leading predictors of scholarly productivity included faculty rank and year of PhD. The full model explained 37 percent of the variance in article production and 44 percent of the variance in scholarly impact.”



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["The Impact of Gender on the Review of the Curricula Vitae of Job Applicants and Tenure Candidates: A National Empirical Study"](#). *Sex Roles*, 1999. Vol. 41 pg. 509-528. Doi: <https://doi.org/10.1023/A:1018839203698>

Gender of names on CVs affects psychology job and tenure applicants

"The purpose of this study was to determine some of the factors that influence outside reviewers and search committee members when they are reviewing curricula vitae, particularly with respect to the gender of the name on the vitae. The participants in this study were 238 male and female academic psychologists who listed a university address in the 1997 Directory of the American Psychological Association. They were each sent one of four versions of a curriculum vitae (i.e., female job applicant, male job applicant, female tenure candidate, and male tenure candidate), along with a questionnaire and a self-addressed stamped envelope. All the curricula vitae actually came from a real-life scientist at two different stages in her career, but the names were changed to traditional male and female names. Although an exclusively between-groups design was used to avoid sparking gender conscious responding, the results indicate that the participants were clearly able to distinguish between the qualifications of the job applicants versus the tenure candidates, as evidenced by suggesting higher starting salaries, increased likelihood of offering the tenure candidates a job, granting them tenure, and greater respect for their teaching, research, and service records. Both men and women were more likely to vote to hire a male job applicant than a female job applicant with an identical record. Similarly, both sexes reported that the male job applicant had done adequate teaching, research, and service experience compared to the female job applicant with an identical record. In contrast, when men and women examined the highly competitive curriculum vitae of the real-life scientist who had gotten early tenure, they were equally likely to tenure the male and female tenure candidates and there was no difference in their ratings of their teaching, research, and service experience. There was no significant main effect for the quality of the institution or professional rank on selectivity in hiring and tenuring decisions. The results of this study indicate a gender bias for both men and women in preference for male job applicants."

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Language of letters of reference for medical faculty differs by gender of the person for whom it is written.

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### **Haswell and Haswell 1996**

“[Gender Bias and Critique of Student Writing](https://doi.org/10.1016/S1075-2935(96)90004-5)”. *Assessing Writing*, 1996. Vol. 3.1, pg. 31-83. Doi: [https://doi.org/10.1016/S1075-2935\(96\)90004-5](https://doi.org/10.1016/S1075-2935(96)90004-5)

The effect of gender on the critique of student writing

“The main purpose of this empirical investigation into gender and writing instruction is to locate ways that the critique of readers may be affected by their foreknowledge of the student writer's sex. Thirty-two teachers and 32 students evaluated and diagnosed no student essays, neither overtly marked as to the sex of the writer. Independent variables controlled for were sex of reader, sex of the interviewer who prompted response during the taped session, professional status of participant (student or teacher), and knowledge of author's biological sex by participant (prior knowledge or no prior knowledge). Statistical analysis found gender interacting with all these variables. Among other associations, readers spontaneously constructed the author's sex even when they had not been informed of it; they rated the essays lower when they knew the writer was of their own sex, as measured by holistic rating and percentage of positive critique; they showed an anti-male bias as measured by holistic rating, and an anti-feminine bias as measured by attribution of agency to the writing; and they tended to suppress gender, as measured by the amount of agency that they passivized or made neutral. In sum, the study found evidence for the active presence of gender effects, especially via polarized gender stereotypes, as students and teachers appraise student writing.”

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### **Post-doctoral**

#### **Bornmann, Mutz, Daniel 2009**

“[The influence of the applicant's gender on the modeling of a peer review process by using latent Markov models](#)”. *Scientometrics*, 2009, Vol. 81.2, pg. 407-411. Doi: <http://doi.org/10.1007/s11192-008-2189-2>

The effect of gender on the peer review process

“In the grant peer review process we can distinguish various evaluation stages in which assessors judge applications on a rating scale. Bornmann & al. [2008] show that latent Markov models offer a fundamentally good opportunity to model statistically peer review processes. The main objective of this

short communication is to test the influence of the applicants' gender on the modeling of a peer review process by using latent Markov models. We found differences in transition probabilities from one stage to the other for applications for a doctoral fellowship submitted by male and female applicants."

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"The major findings from the statistical profile are:

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The higher the rank, the lower the percentage of women in comparison to men.

The key factors determined by the Panel that impact the career paths of women start early in life with stereotypes that define roles and expectations, followed by a lack of knowledge about requisites for potential career paths, and a lack of role models and mentors. These issues, combined with a rigid tenure track structure, challenges associated with the paid work-family life balance, and the importance of increased support and coordination amongst governments and institutions should be examined if Canada is going to achieve a greater gender balance within academia."



#### **Gasser and Shaffer 2014**

[“Career Development of Women in Academia: Traversing the Leaky Pipeline”](#). *The Professional Counselor*, 2014. Vol. 4.4, pg. 332-352.

Model for women’s experiences in academia, specifically to help with counseling

“Women’s experiences in academia are laden with a fundamental set of issues pertaining to gender inequalities. A model reflecting women’s career development and experiences around their academic pipeline (or career in academia) is presented. This model further conveys a new perspective on the experiences of women academicians before, during and after their faculty appointments and can help in career counseling. Specifically, this model provides career counselors with a framework to conceptualize the concerns of women clients who work in academic environments. Other implications for career counseling as well as limitations and future directions also are discussed.”

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#### **Towers 2008**

[“A Case Study of Gender Bias at the Postdoctoral Level in Physics, and its Resulting Impact on the Academic Career Advancement of Females”](#). 2008. Available from [arXiv.org:0804.2026](https://arxiv.org/abs/0804.2026)

Women get only 1/3 of conference presentations even though they are more productive than male counterparts. This also affects career advancement.

“This case study of a typical U.S. particle physics experiment explores the issues of gender bias and how it affects the academic career advancement prospects of women in the field of physics beyond the postdoctoral level; we use public databases to study the career paths of the full cohort of 57 former postdoctoral researchers on the Run II Dzero experiment to examine if males and females were treated in a gender-blind fashion on the experiment. The study finds that the female researchers were on average significantly more productive compared to their male peers, yet were allocated only 1/3 the amount of conference presentations based on their productivity. The study also finds that the dramatic gender bias in allocation of conference presentations appeared to have significant negative impact on the academic career advancement of the females. The author has a PhD in particle physics and worked for six years as a postdoctoral research scientist, five of which were spent collaborating at Fermilab. She is currently completing a graduate degree in statistics.”

### **Wenneras and Wold 1997**

“[Nepotism and sexism in peer-review](#)” *Nature*, 1997. Vol 387.6631, pg. 341-343. Doi: <http://doi.org/10.1038/387341a0>

Gender bias affects post-doctoral fellowships in Sweden. This was a landmark study on unconscious bias.

“Throughout the world, women leave their academic careers to a far greater extent than their male colleagues. In Sweden, for example, women are awarded 44 per cent of biomedical PhDs but hold a mere 25 per cent of the postdoctoral positions. It used to be thought that once there were enough entry-level female scientists, the male domination of the upper echelons of academic research would automatically diminish. But this has not happened in the biomedical field, where disproportionate numbers of men still hold higher academic positions, despite the significant numbers of women who have entered this research field since the 1970s.”

## **Graduate students**

### **Bornmann, Mutz, Daniel 2009**

“[The influence of the applicant’s gender on the modeling of a peer review process by using latent Markov models](#)”. *Scientometrics*, 2009, Vol. 81.2, pg. 407-411. Doi: <http://doi.org/10.1007/s11192-008-2189-2>

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### **Carnes, Bartels, Kaatz, and Kolehmainen 2015**

["Why is John More Likely to Become Department Chair Than Jennifer?"](#) *Transactions of the American Clinical and Climatological Association*, ND 2015. Vol. 126, pg. 197-214.

Gender bias in medical school and its effects on experience and leadership

"This article reviews some of our research on how gender stereotypes and their accompanying assumptions and expectations can influence the careers of male and female physicians and scientists in a myriad of subtle ways. Although stereotype-based cognitive biases may be invisible and unintentional, they nevertheless shape the experiences of women in academic medicine in ways that frequently constrain their opportunities. We present research on the following: 1) subtle differences in the evaluation of male and female medical students as revealed through text analysis of written evaluations at a critical career juncture, 2) how cultural assumptions about the way men and women should and should not behave influence medical residents' experiences as leaders, and 3) how approaching gender bias among faculty in academic medicine, science, and engineering as a remedial habit can be successful in changing individual behaviors and in improving department climate."

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#### **Kattari 2015**

[“Examining Ableism in Higher Education through Social Dominance Theory and Social Learning Theory”](#). *Innovative Higher Education*, 2015. Vol. 40, pg. 375-386. Doi: <https://doi.org/10.1007/s10755-015-9320-0>

Examining the need for different interactions and ally behavior between able-bodied professors and students with disabilities

“In most societies, some social identity groups hold a disproportionate amount of social, cultural, and economic power, while other groups hold little. In contemporary U.S. society, examples of this power are evident around issues of ability/disability, with able-bodied individuals wielding social dominance and people with disabilities experiencing a lack of social, cultural, and economic power. However, this relationship between able-bodied individuals and people with disabilities is neither static nor determinant; and through social modeling it may be altered to foster increased positive outcomes for people with disabilities, including both undergraduate and graduate students. As educators and institutional staff members frequently engage with students with disabilities, improving ally behavior and overall accessibility will increase rapport building with students, leading to more just and equitable interactions.”

### **Milkman, Akinola, and Chugh 2012**

“[Temporal Distance and Discrimination: An Audit Study in Academia](#)”. *Psychological Science*, 2012. Pg. 1-8. Doi: <https://doi.org/10.1177/0956797611434539>

Discrimination against women and minorities by professors when planning meetings

“Through a field experiment set in academia (with a sample of 6,548 professors), we found that decisions about distant-future events were more likely to generate discrimination against women and minorities (relative to Caucasian males) than were decisions about near-future events. In our study, faculty members received e-mails from fictional prospective doctoral students seeking to schedule a meeting either that day or in 1 week; students’ names signaled their race (Caucasian, African American, Hispanic, Indian, or Chinese) and gender. When the requests were to meet in 1 week, Caucasian males were granted access to faculty members 26% more often than were women and minorities; also, compared with women and minorities, Caucasian males received more and faster responses. However, these patterns were essentially eliminated when prospective students requested a meeting that same day. Our identification of a temporal discrimination effect is consistent with the predictions of construal-level theory and implies that subtle contextual shifts can alter patterns of race- and gender-based discrimination.”

### **Milkman, Akinola, and Chugh 2014**

“[What Happens Before? A Field Experiment Exploring How Pay and Representation Differentially Shape Bias on the Pathway into Organizations](#)”. *Journal of Applied Psychology*, 2014. Doi: <http://dx.doi.org/10.2139/ssrn.2063742>

Faculty responses to students discussing research opportunities were biased in favor of white males above all other categories

“Little is known about how discrimination manifests before individuals formally apply to organizations or how it varies within and between organizations. We address this knowledge gap through an audit study in academia of over 6,500 professors at top U.S. universities drawn from 89 disciplines and 259 institutions. In our experiment, professors were contacted by fictional prospective students seeking to discuss research opportunities prior to applying to a doctoral program. Names of students were

randomly assigned to signal gender and race (Caucasian, Black, Hispanic, Indian, Chinese), but messages were otherwise identical. We hypothesized that discrimination would appear at the informal “pathway” preceding entry to academia and would vary by discipline and university as a function of faculty representation and pay. We found that when considering requests from prospective students seeking mentoring in the future, faculty were significantly more responsive to Caucasian males than to all other categories of students, collectively, particularly in higher-paying disciplines and private institutions. Counterintuitively, the representation of women and minorities and discrimination were uncorrelated, a finding that suggests greater representation cannot be assumed to reduce discrimination. This research highlights the importance of studying decisions made before formal entry points into organizations and reveals that discrimination is not evenly distributed within and between organizations.”

## Undergraduates

### Corcoran, Hundhammer, and Mussweiler 2009

[“A tool for thought! When comparative thinking reduces stereotyping effects”](#). *Journal of Experimental Social Psychology*, 2009. Vol 45, pg. 1008-1011. Doi: <http://dx.doi.org/10.1016/j.jesp.2009.04.015>

Comparative thinking helps reduce stereotyping.

“Stereotypes have pervasive, robust, and often unwanted effects on how people see and behave towards others. Undoing these effects has proven to be a daunting task. Two studies demonstrate that procedurally priming participants to engage in comparative thinking with a generalized focus on differences reduces behavioral and judgmental stereotyping effects. In Study 1, participants who were procedurally primed to focus on differences sat closer to a skinhead – a member of a negatively stereotyped group. In Study 2, participants primed on differences ascribed less gender stereotypic characteristics to a male and female target person. This suggests that comparative thinking with a focus on differences may be a simple cognitive tool to reduce the behavioral and judgmental effects of stereotyping.”

### Council of Canadian Academies 2012

[“Strengthening Canada’s Research Capacity: The Gender Dimension – The Expert Panel on Women in University Research”](#). 2012.

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### **Grunspan, Eddy, Brownell, Wiggins, Crowe, and Goodreau 2016**

“[Males Under-Estimate Academic Performance of Their Female Peers in Undergraduate Biology Classrooms](https://doi.org/10.1371/journal.pone.0148405)”. *PLoS One*, 2016. Vol. 11.2. Doi: <https://dx.doi.org/10.1371/journal.pone.0148405>

#### **Male underestimation of female peers in biology**

“Women who start college in one of the natural or physical sciences leave in greater proportions than their male peers. The reasons for this difference are complex, and one possible contributing factor is the social environment women experience in the classroom. Using social network analysis, we explore how gender influences the confidence that college-level biology students have in each other’s mastery of biology. Results reveal that males are more likely than females to be named by peers as being knowledgeable about the course content. This effect increases as the term progresses, and persists even after controlling for class performance and outspokenness. The bias in nominations is specifically due to males over-nominating their male peers relative to their performance. The over-nomination of male peers is commensurate with an overestimation of male grades by 0.57 points on a 4 point grade scale, indicating a strong male bias among males when assessing their classmates. Females, in contrast, nominated equitably based on student performance rather than gender, suggesting they lacked gender biases in filling out these surveys. These trends persist across eleven surveys taken in three different iterations of the same Biology course. In every class, the most renowned students are always male. This favoring of males by peers could influence student self-confidence, and thus persistence in this STEM discipline.”

### **Haswell and Haswell 1996**

“[Gender Bias and Critique of Student Writing](https://doi.org/10.1016/S1075-2935(96)90004-5)”. *Assessing Writing*, 1996. Vol. 3.1, pg. 31-83. Doi: [https://doi.org/10.1016/S1075-2935\(96\)90004-5](https://doi.org/10.1016/S1075-2935(96)90004-5)

#### **The effect of gender on the critique of student writing**

“The main purpose of this empirical investigation into gender and writing instruction is to locate ways that the critique of readers may be affected by their foreknowledge of the student writer's sex. Thirty-two teachers and 32 students evaluated and diagnosed 40 student essays, neither overtly marked as to the sex of the writer. Independent variables controlled for were sex of reader, sex of the interviewer who prompted response during the taped session, professional status of participant (student or teacher), and knowledge of author's biological sex by participant (prior knowledge or no prior knowledge). Statistical analysis found gender interacting with all these variables. Among other

associations, readers spontaneously constructed the author's sex even when they had not been informed of it; they rated the essays lower when they knew the writer was of their own sex, as measured by holistic rating and percentage of positive critique; they showed an anti-male bias as measured by holistic rating, and an anti-feminine bias as measured by attribution of agency to the writing; and they tended to suppress gender, as measured by the amount of agency that they passivized or made neutral. In sum, the study found evidence for the active presence of gender effects, especially via polarized gender stereotypes, as students and teachers appraise student writing."

#### **Jacoby-Senghor, Sinclair, and Shelton 2016**

["A lesson in bias: The relationship between implicit racial bias and performance in pedagogical contexts". \*Journal of Experimental Social Psychology\*, 2016. Vol. 63, pg. 50-55. Doi: <http://dx.doi.org/10.1016/j.jesp.2015.10.010>](https://doi.org/10.1016/j.jesp.2015.10.010)

Racial bias of instructor negatively affects the students

"We posit instructors' implicit racial bias as a factor in racial disparities in academic achievement and test the relationship between this factor, instructor lesson quality, and learners' subsequent test performance. In Study 1, white participants were assigned to the role of instructor and gave a short lesson to a learner who was either black or white. Instructors' implicit bias predicted diminished test performance on the part of black, but not white, learners. Further, instructors' anxiety and lesson quality, as rated by coders, mediated the relationship between their implicit bias and learners' test performance. In Study 2, a separate sample of non-black participants watched videos of instructors from cross-race lessons from the first experiment. Once again, instructors' implicit bias predicted diminished test performance by participants. These findings suggest that underperformance by minorities in academic domains may be driven by the effect implicit racial biases have on educators' pedagogical effectiveness."

#### **Jones, Fanson, Lanfear, Symonds, and Higgie 2014**

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#### **Kawakami, Dovidio, Moll, Hermsen, and Russin 2000**

“[Just say no \(to stereotyping\): effects of training in the negation of stereotypic associations on stereotype activation](#)”. *Journal of Personality and Social Psychology*, 2000. Vol 78.5, pg. 871-888. Doi: <http://dx.doi.org/10.1037/0022-3514.78.5.871>

Training works to combat stereotyping

“The primary aim of the present research was to examine the effect of training in negating stereotype associations on stereotype activation. Across 3 studies, participants received practice in negating stereotypes related to skinhead and racial categories. The subsequent automatic activation of stereotypes was measured using either a primed Stroop task (Studies 1 and 2) or a person categorization task (Study 3). The results demonstrate that when receiving no training or training in a nontarget category stereotype, participants exhibited spontaneous stereotype activation. After receiving an extensive amount of training related to a specific category, however, participants demonstrated reduced stereotype activation. The results from the training task provide further evidence for the impact of practice on participants' proficiency in negating stereotypes.”

#### **Knobloch-Westerwick, Glynn, and Hoge 2013**

["The Matilda Effect in Science Communication: An Experiment on Gender Bias in Publication Quality Perceptions and Collaboration Interest"](https://doi.org/10.1177/1075547012472684). *Science Communication*, 2013. Vol 35, pg. 603-625. Doi: <https://doi.org/10.1177/1075547012472684>

Gender affects perception of the author of scientific conference abstracts

"An experiment with 243 young communication scholars tested hypotheses derived from role congruity theory regarding impacts of author gender and gender typing of research topics on perceived quality of scientific publications and collaboration interest. Participants rated conference abstracts ostensibly authored by females or males, with author associations rotated. The abstracts fell into research areas perceived as gender-typed or gender-neutral to ascertain impacts from gender typing of topics. Publications from male authors were associated with greater scientific quality, in particular if the topic was male-typed. Collaboration interest was highest for male authors working on male-typed topics. Respondent sex did not influence these patterns."

### **Legault, Gutsell, and Inzlicht 2011**

["Ironical Effects of Antiprejudice Messages: How Motivational Interventions Can Reduce \(but Also Increase\) Prejudice"](https://doi.org/10.1177/0956797611427918) *Psychological Science*, 2011. Vol 22.12, pg. 1472-1477. Doi: <https://doi.org/10.1177/0956797611427918>

The type of anti-prejudice message matters. If it's autonomous motivation, it decreases prejudice, but if it's a societal requirement, it can increase prejudice.

"Although prejudice-reduction policies and interventions abound, is it possible that some of them result in the precise opposite of their intended effect—an increase in prejudice? We examined this question by exploring the impact of motivation-based prejudice-reduction interventions and assessing whether certain popular practices might in fact increase prejudice. In two experiments, participants received detailed information on, or were primed with, the goal of prejudice reduction; the information and primes either encouraged autonomous motivation to regulate prejudice or emphasized the societal requirement to control prejudice. Ironically, motivating people to reduce prejudice by emphasizing external control produced more explicit and implicit prejudice than did not intervening at all. Conversely, participants in whom autonomous motivation to regulate prejudice was induced displayed less explicit and implicit prejudice compared with no-treatment control participants. We outline strategies for effectively reducing prejudice and discuss the detrimental consequences of enforcing antiprejudice standards."

### **Rudman, Ashmore, and Gary 2001**

["Unlearning' automatic biases: The malleability of implicit prejudice and stereotypes"](http://dx.doi.org/10.1037/0022-3514.81.5.856). *Journal of Personality and Social Psychology*, 2001. Vol. 81.5 pg. 856–868. Doi: <http://dx.doi.org/10.1037/0022-3514.81.5.856>

Diversity education is successful in reducing biases and implicit prejudice.

“The present research suggests that automatic and controlled intergroup biases can be modified through diversity education. In 2 experiments, students enrolled in a prejudice and conflict seminar showed significantly reduced implicit and explicit anti-Black biases, compared with control students. The authors explored correlates of prejudice and stereotype reduction. In each experiment, seminar students' implicit and explicit change scores positively covaried with factors suggestive of affective and cognitive processes, respectively. The findings show the malleability of implicit prejudice and stereotypes and suggest that these may effectively be changed through affective processes.”

### **Steele and Aronson 1995**

“[Stereotype Threat and the Intellectual Test Performance of African Americans](#)”. *Journal of Personality and Social Psychology*, 1995. Vol. 69.5, pg. 797-811. Doi: <http://dx.doi.org/10.1037/0022-3514.69.5.797>

Black students will underperform when feeling the pressure of negative stereotypes.

“Stereotype threat is being at risk of confirming, as self-characteristic, a negative stereotype about one's group. Studies 1 and 2 varied the stereotype vulnerability of Black participants taking a difficult verbal test by varying whether or not their performance was ostensibly diagnostic of ability, and thus, whether or not they were at risk of fulfilling the racial stereotype about their intellectual ability. Reflecting the pressure of this vulnerability, Blacks underperformed in relation to Whites in the ability-diagnostic condition but not in the nondiagnostic condition (with Scholastic Aptitude Tests controlled). Study 3 validated that ability-diagnosticity cognitively activated the racial stereotype in these participants and motivated them not to conform to it, or to be judged by it. Study 4 showed that mere salience of the stereotype could impair Blacks' performance even when the test was not ability diagnostic. The role of stereotype vulnerability in the standardized test performance of ability-stigmatized groups is discussed.”

### **Lab Manager**

#### **Moss-Racusin, Dovidio, Brescoll, Graham, and Handelsman 2012**

“[Science faculty's subtle gender biases favor male students](#)”. *PNAS*, 2012. Vol 109.41. doi: <https://doi.org/10.1073/pnas.1211286109>

Bias against lab manager applications with female names, rather than male names

“Despite efforts to recruit and retain more women, a stark gender disparity persists within academic science. Abundant research has demonstrated gender bias in many demographic groups, but has yet to experimentally investigate whether science faculty exhibit a bias against female students that could contribute to the gender disparity in academic science. In a randomized double-blind study (n = 127), science faculty from research-intensive universities rated the application materials of a student—who was randomly assigned either a male or female name—for a laboratory manager position. Faculty participants rated the male applicant as significantly more competent and hireable than the (identical) female applicant. These participants also selected a higher starting salary and offered more career mentoring to the male applicant. The gender of the faculty participants did not affect responses, such that female and male faculty were equally likely to exhibit bias against the female student. Mediation

analyses indicated that the female student was less likely to be hired because she was viewed as less competent. We also assessed faculty participants' preexisting subtle bias against women using a standard instrument and found that preexisting subtle bias against women played a moderating role, such that subtle bias against women was associated with less support for the female student, but was unrelated to reactions to the male student. These results suggest that interventions addressing faculty gender bias might advance the goal of increasing the participation of women in science."

### **Shen 2013**

["Inequality quantified: Mind the gender gap". \*Nature\*, 2013. Vol. 495, pg. 22-24. Doi: <https://doi.org/10.1038/495022a>](https://doi.org/10.1038/495022a)

Gender gap in the sciences

"Female scientists have made steady gains in recent decades but they face persistent career challenges. US universities and colleges employ far more male scientists than female ones and men earn significantly more in science occupations."

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## **Recognitions**

### **Grant/Award recipients**

#### **Bornmann, Mutz, and Daniel 2007**

["Gender differences in grant peer review: A meta-analysis". \*Journal of Informetrics\*, 2007. Pg. 226-238. Doi: <https://doi.org/10.1016/j.joi.2007.03.001>](https://doi.org/10.1016/j.joi.2007.03.001)

Meta-analysis revealing gender bias in grant allocations

"Narrative reviews of peer review research have concluded that there is negligible evidence of gender bias in the awarding of grants based on peer review. Here, we report the findings of a meta-analysis of 21 studies providing, to the contrary, evidence of robust gender differences in grant award procedures. Even though the estimates of the gender effect vary substantially from study to study, the model estimation shows that all in all, among grant applicants men have statistically significant greater odds of receiving grants than women by about 7%."

#### **Bornmann, Mutz, and Daniel 2009**

["The influence of the applicant's gender on the modeling of a peer review process by using latent Markov models"](http://doi.org/10.1007/s11192-008-2189-2). *Scientometrics*, 2009, Vol. 81.2, pg. 407-411. Doi: <http://doi.org/10.1007/s11192-008-2189-2>

The effect of gender on the peer review process

"In the grant peer review process we can distinguish various evaluation stages in which assessors judge applications on a rating scale. Bornmann & al. [2008] show that latent Markov models offer a fundamentally good opportunity to model statistically peer review processes. The main objective of this short communication is to test the influence of the applicants' gender on the modeling of a peer review process by using latent Markov models. We found differences in transition probabilities from one stage to the other for applications for a doctoral fellowship submitted by male and female applicants."

### **Ledin, Bornmann, Gannon, and Wallon 2007**

["A persistent problem: Traditional gender roles hold back female scientists"](https://doi.org/10.1038/sj.embor.7401109). *European Molecular Biology Organization Reports*, 2007. Vol 8.11, pg. 982 -987. Doi: <https://doi.org/10.1038/sj.embor.7401109>

Gender's influence on various parts of a scientist's career

The researchers examined the success rate of female applicants who apply for the European Molecular Biology Organization's (EMBO) Long-Term Fellowships (LTFs) and the Young Investigator Programme (YIP), which is typically lower than the rate for male applicants. They investigated different factors which could result in this bias, including names on applications, language of CVs, and bibliometric data. They found that women typically have a lower publication rate. Finally, they investigate the possible causes for lower productivity, which can include social factors such as family. They conclude that a number of factors combine to affect women's success rate.

### **Lincoln, Pincus, Koster, and Leboy 2012**

["The Matilda Effect in science: Awards and prizes in the US, 1990s and 2000s"](https://doi.org/10.1177/0306312711435830). *Social Studies of Science*, 2012. Vol. 42.2, pg. 307-320. Doi: <https://doi.org/10.1177/0306312711435830>

Women continue to receive less recognition than men in the sciences; one example of this is in awards allocated.

"Science is stratified, with an unequal distribution of research facilities and rewards among scientists. Awards and prizes, which are critical for shaping scientific career trajectories, play a role in this stratification when they differentially enhance the status of scientists who already have large reputations: the 'Matthew Effect'. Contrary to the Mertonian norm of universalism – the expectation that the personal attributes of scientists do not affect evaluations of their scientific claims and contributions – in practice, a great deal of evidence suggests that the scientific efforts and achievements of women do not receive the same recognition as do those of men: the 'Matilda Effect'. Awards in science, technology, engineering and medical (STEM) fields are not immune to these biases. We outline the research on gender bias in evaluations of research and analyze data from 13 STEM disciplinary

societies. While women's receipt of professional awards and prizes has increased in the past two decades, men continue to win a higher proportion of awards for scholarly research than expected based on their representation in the nomination pool. The results support the powerful twin influences of implicit bias and committee chairs as contributing factors. The analysis sheds light on the relationship of external social factors to women's science careers and helps to explain why women are severely underrepresented as winners of science awards. The ghettoization of women's accomplishments into a category of 'women-only' awards also is discussed."

### **Marsh, Jayasinghe, and Bond 2008**

["Improving the Peer-Review Process for Grant Applications: Reliability, Validity, Bias, and Generalizability"](#). *American Psychologist*, 2008. Vol. 63.3, pg. 160-168. Doi: <http://dx.doi.org/10.1037/0003-066X.63.3.160>

Peer-review is a flawed process, and the "reader system" is more reliable.

"Peer review is a gatekeeper, the final arbiter of what is valued in academia, but it has been criticized in relation to traditional psychological research criteria of reliability, validity, generalizability, and potential biases. Despite a considerable literature, there is surprisingly little sound peer-review research examining these criteria or strategies for improving the process. This article summarizes the authors' research program with the Australian Research Council, which receives thousands of grant proposals from the social science, humanities, and science disciplines and reviews by assessors from all over the world. Using multilevel cross-classified models, the authors critically evaluated peer reviews of grant applications and potential biases associated with applicants, assessors, and their interaction (e.g., age, gender, university, academic rank, research team composition, nationality, experience). Peer reviews lacked reliability, but the only major systematic bias found involved the inflated, unreliable, and invalid ratings of assessors nominated by the applicants themselves. The authors propose a new approach, the reader system, which they evaluated with psychology and education grant proposals and found to be substantially more reliable and strategically advantageous than traditional peer reviews of grant applications."

### **RAND 2005**

["Is There Gender Bias in Federal Grant Programs?"](#). *RAND Infrastructure, Safety, and Environment Research Brief*, 2005. RB-9147-NSF

Federal Grant agencies tend not to have gender differences in allocation except at NIH and with subsequent application rates.

"Based on analysis of three federal agency databases and two researcher surveys, we did not find gender differences in federal grant funding outcomes, with two exceptions. First, we found a gender gap in the amount of funding on average that females receive relative to their male counterparts at NIH, although important caveats are associated with that finding. Second, we found a gender gap in subsequent application rates. Suggestions for future data gathering and analysis are discussed."

## **Wenneras and Wold 1997**

[“Nepotism and sexism in peer-review”](https://doi.org/10.1038/387341a0) *Nature*, 1997. Vol 387.6631, pg. 341-343. Doi: <http://doi.org/10.1038/387341a0>

Gender bias affects post-doctoral fellowships in Sweden. This was a landmark study on unconscious bias.

“Throughout the world, women leave their academic careers to a far greater extent than their male colleagues. In Sweden, for example, women are awarded 44 per cent of biomedical PhDs but hold a mere 25 per cent of the postdoctoral positions. It used to be thought that once there were enough entry-level female scientists, the male domination of the upper echelons of academic research would automatically diminish. But this has not happened in the biomedical field, where disproportionate numbers of men still hold higher academic positions, despite the significant numbers of women who have entered this research field since the 1970s.”

## **Research**

### **Council of Canadian Academies 2012**

[“Strengthening Canada’s Research Capacity: The Gender Dimension – The Expert Panel on Women in University Research”](#). 2012.

“Question: What policies and what societal, cultural, and institutional, economic, and/or other relevant factors influence the career trajectory of women researchers in Canadian universities and underlie gender disparities observed in Canadian university researcher’s statistical profile, by discipline area, rank, duty/position/stature, salary, tenure, research funding and or/any other relevant indicators?”

“The major findings from the statistical profile are:

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Male communication scientists receive more citations than female scientists.

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## **Stack 2002**

[“Gender and Scholarly Productivity: The case of criminal justice”](#). *Journal of Criminal Justice*, 2002. Vol. 30, pg. 175-182. Doi: [http://dx.doi.org/10.1016/S0047-2352\(01\)00134-9](http://dx.doi.org/10.1016/S0047-2352(01)00134-9)

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## **Towers 2008**

[“A Case Study of Gender Bias at the Postdoctoral Level in Physics, and its Resulting Impact on the Academic Career Advancement of Females”](#). 2008. Available from [arXiv.org:0804.2026](http://arXiv.org:0804.2026)

Women get only 1/3 of conference presentations even though they are more productive than male counterparts. This also affects career advancement.

“This case study of a typical U.S. particle physics experiment explores the issues of gender bias and how it affects the academic career advancement prospects of women in the field of physics beyond the postdoctoral level; we use public databases to study the career paths of the full cohort of 57 former



postdoctoral researchers on the Run II Dzero experiment to examine if males and females were treated in a gender-blind fashion on the experiment. The study finds that the female researchers were on average significantly more productive compared to their male peers, yet were allocated only 1/3 the amount of conference presentations based on their productivity. The study also finds that the dramatic gender bias in allocation of conference presentations appeared to have significant negative impact on the academic career advancement of the females. The author has a PhD in particle physics and worked for six years as a postdoctoral research scientist, five of which were spent collaborating at Fermilab. She is currently completing a graduate degree in statistics.”

## Conference-related

**Jones, Fanson, Lanfear, Symonds, and Higgie 2014**

“[Gender differences in conference presentations: a consequence of self-selection?](https://doi.org/10.7717/peerj.627)” *PeerJ*, 2014. Doi: <https://doi.org/10.7717/peerj.627>

Conference presentations demonstrate the impacts of gender bias and visibility in evolutionary biology.

“Women continue to be under-represented in the sciences, with their representation declining at each progressive academic level. These differences persist despite long-running policies to ameliorate gender inequity. We compared gender differences in exposure and visibility at an evolutionary biology conference for attendees at two different academic levels: student and post-PhD academic. Despite there being almost exactly a 1:1 ratio of women and men attending the conference, we found that when considering only those who presented talks, women spoke for far less time than men of an equivalent academic level: on average student women presented for 23% less time than student men, and academic women presented for 17% less time than academic men. We conducted more detailed analyses to tease apart whether this gender difference was caused by decisions made by the attendees or through bias in evaluation of the abstracts. At both academic levels, women and men were equally likely to request a presentation. However, women were more likely than men to prefer a short talk, regardless of academic level. We discuss potential underlying reasons for this gender bias, and provide recommendations to avoid similar gender biases at future conferences.”

**Knobloch-Westerwick, Glynn, and Hugu 2013**

“[The Matilda Effect in Science Communication: An Experiment on Gender Bias in Publication Quality Perceptions and Collaboration Interest](https://doi.org/10.1177/1075547012472684)”. *Science Communication*, 2013. Vol 35, pg. 603-625. Doi: <https://doi.org/10.1177/1075547012472684>

Gender affects perception of the author of scientific conference abstracts

“An experiment with 243 young communication scholars tested hypotheses derived from role congruity theory regarding impacts of author gender and gender typing of research topics on perceived quality of scientific publications and collaboration interest. Participants rated conference abstracts ostensibly authored by females or males, with author associations rotated. The abstracts fell into research areas perceived as gender-typed or gender-neutral to ascertain impacts from gender typing of topics.

Publications from male authors were associated with greater scientific quality, in particular if the topic was male-typed. Collaboration interest was highest for male authors working on male-typed topics. Respondent sex did not influence these patterns.”

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## **Publishing**

### **Budden, Tregenza, Aarssen, Koricheva, Leimu, and Lortie 2008**

[“Double-Blind Review Favours Increased Representation of Female Authors”](#). *Trends in Ecology and Evolution*, 2008. Vol. 23.1, pg. 4–6. Doi: <http://dx.doi.org/10.1016/j.tree.2007.07.008>

Double-blind review for journals increases the number of female submissions published.

“Double-blind peer review, in which neither author nor reviewer identity are revealed, is rarely practised in ecology or evolution journals. However, in 2001, double-blind review was introduced by the journal *Behavioral Ecology*. Following this policy change, there was a significant increase in female first-authored papers, a pattern not observed in a very similar journal that provides reviewers with author information. No negative effects could be identified, suggesting that double-blind review should be considered by other journals.”

### **Davenport and Snyder 1995**

[“Who Cites Women? Whom Do Women Cite?: An Exploration of Gender and Scholarly Citation in Sociology”](#). *Journal of Documentation*, 1995. Vol. 51.4, pg. 404-410.  
<http://dx.doi.org/10.1108/eb026958>

Gender bias in sociological citation

“The authors offer a brief analysis of citation practice in twenty-five American sociological journals, in an attempt to explore claims that citation may show gender bias. Their work follows previous surveys of gender and citation and publication in the social sciences which suggest that women perform less well than men in both areas. The findings of this study suggest that there is indeed gender bias in citation in sociology, and the authors offer some hypotheses to explain the phenomenon that might be tested in further research.”

**Jagsi, Guancial, Worobey, Henault, Chang, Starr, Tarbell, and Hylek 2006**

[“The 'Gender Gap' in Authorship of Academic Medical Literature - A 35-Year Perspective”](#). *The New England Journal of Medicine*, 2006. Vol. 355, pg. 281-287. Doi: <https://doi.org/10.1056/NEJMsa053910>

Increase in female authors in medical journals, but women are still a minority

“Background

Participation of women in the medical profession has increased during the past four decades, but issues of concern persist regarding disparities between the sexes in academic medicine. Advancement is largely driven by peer-reviewed original research, so we sought to determine the representation of female physician-investigators among the authors of selected publications during the past 35 years.

Methods

Original articles from six prominent medical journals — the *New England Journal of Medicine (NEJM)*, the *Journal of the American Medical Association (JAMA)*, the *Annals of Internal Medicine (Ann Intern Med)*, the *Annals of Surgery (Ann Surg)*, *Obstetrics & Gynecology (Obstet Gynecol)*, and the *Journal of Pediatrics (J Pediatr)* — were categorized according to the sex of both the first and the senior (last listed) author. Sex was also determined for the authors of guest editorials in *NEJM* and *JAMA*. Data were collected for the years 1970, 1980, 1990, 2000, and 2004. The analysis was restricted to authors from U.S. institutions holding M.D. degrees.

Results

The sex was determined for 98.5 percent of the 7249 U.S. authors of original research with M.D. degrees. The proportion of first authors who were women increased from 5.9 percent in 1970 to 29.3 percent in 2004 ( $P<0.001$ ), and the proportion of senior authors who were women increased from 3.7 percent to 19.3 percent ( $P<0.001$ ) during the same period. The proportion of authors who were women increased most sharply in *Obstet Gynecol* (from 6.7 percent of first authors and 6.8 percent of senior authors in 1970 to 40.7 percent of first authors and 28.0 percent of senior authors in 2004) and *J Pediatr* (from 15.0 percent of first authors and 4.3 percent of senior authors in 1970 to 38.9 percent of first authors and 38.0 percent of senior authors in 2004) and remained low in *Ann Surg* (from 2.3 percent of first authors and 0.7 percent of senior authors in 1970 to 16.7 percent of first authors and 6.7 percent of

senior authors in 2004). In 2004, 11.4 percent of the authors of guest editorials in *NEJM* and 18.8 percent of the authors of guest editorials in *JAMA* were women.

## Conclusions

Over the past four decades, the proportion of women among both first and senior physician-authors of original research in the United States has significantly increased. Nevertheless, women still compose a minority of the authors of original research and guest editorials in the journals studied."

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## Kretschmer, Kundra, deB. Beaver, and Kretschmer 2012

["Gender bias in journals of gender studies"](#). *Scientometrics*, 2012. Vol 93.1, pg.135–150. Doi: <https://doi.org/10.1007/s11192-012-0661-5>

Gender bias changes by discipline: there is less bias against female authors in gender studies publications.

"The causes of gender bias favoring men in scientific and scholarly systems are complex and related to overall gender relationships in most of the countries of the world. An as yet unanswered question is whether in research publication gender bias is equally distributed over scientific disciplines and fields or if that bias reflects a closer relation to the subject matter. We expected less gender bias with respect to subject matter, and so analysed 14 journals of gender studies using several methods and indicators. The results confirm our expectation: the very high position of women in co-operation is striking; female scientists are relatively overrepresented as first authors in articles. Collaboration behaviour in gender studies differs from that of authors in PNAS. The pattern of gender studies reflects associations between authors of different productivity, or "masters" and "apprentices" but the PNAS pattern reflects associations between authors of roughly the same productivity, or "peers". It would be interesting to extend the analysis of these three-dimensional collaboration patterns further, to see whether a similar characterization holds, what it might imply about the patterns of authorship in different areas, what

those patterns might imply about the role of collaboration, and whether there are differences between females and males in collaboration patterns.”

#### **Ledin, Bornmann, Gannon, and Wallon. 2007**

“[A persistent problem: Traditional gender roles hold back female scientists](#)”. *European Molecular Biology Organization Reports*, 2007. Vol 8.11, pg. 982 -987. Doi: <https://doi.org/10.1038/sj.embor.7401109>

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#### **Lutz 1990**

“[the erasure of women’s writing in sociocultural anthropology](#)” *Journal of the American Ethnological Society*, 1990. Vol. 17.4, pg. 611-627. Doi: <https://doi.org/10.1525/ae.1990.17.4.02a00010>

Female authors are cited less frequently in sociology than male authors.

“Writing, citation, and other canon-setting patterns in the recent (1977–86) literature of sociocultural anthropology reveal the impact of gender relations. In this article, citation is treated as a social practice which, among other things, legitimizes the voice of the cited author. While women produce a substantial proportion of the work available for citation, the proportion of women authors cited is lower than would be expected on that basis, and it varies with the citing author's gender. Annual meetings programs also show a tendency for women to be extremely active, but the frequent focus on gender and feminism is not reflected in overviews of the field. Conclusions are drawn about the relative marginalization of women's work and about the relationship between the warranting of women's academic work and the public or private context of its evaluation.”

#### **McElhinny, Hols, Holtzkener, Unger, and Hicks 2003**

“[Gender, publication and citation in sociolinguistics and linguistic anthropology: The construction of a scholarly canon](#)” *Language in Society*, 2003. Vol. 32.3, pg. 299-328. Doi: <http://dx.doi.org/10.1017/S0047404503323012>

Lower rate of publication for female authors in sociolinguistics and linguistic anthropology

“Feminist scholars have begun to ask how existing conceptual schemes and organizational structures in academic disciplines have excluded women and feminist ideas, and to provide suggestions for transformation. One strand of this work has been the exploration of how canons of thought are constructed in such fields as economics, sociology, and sociocultural anthropology. This article begins such an investigation for sociolinguistics and linguistic anthropology by reviewing how gender correlates with publication and citation over a 35-year period (1965–2000) in five key journals, and in 16 textbooks published in the 1990s. It describes some marked differences in the publication of works by women and on gender in the five journals, as well as some significant differences in the degree to which men and women cite the work of women. It also considers how the rate of publication of articles on sex, gender, and women is correlated with publication of female authors. It concludes with a discussion of the implications of this study for changing institutional practices in our field.”

### **Stack 2002**

“[Gender and Scholarly Productivity: The case of criminal justice](#)”. *Journal of Criminal Justice*, 2002. Vol. 30, pg. 175-182. Doi: [http://dx.doi.org/10.1016/S0047-2352\(01\)00134-9](http://dx.doi.org/10.1016/S0047-2352(01)00134-9)

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## Leadership

### **Bornmann, Mutz, and Daniel 2009**

“[The influence of the applicant’s gender on the modeling of a peer review process by using latent Markov models](http://doi.org/10.1007/s11192-008-2189-2)”. *Scientometrics*, 2009, Vol. 81.2, pg. 407-411. Doi: <http://doi.org/10.1007/s11192-008-2189-2>

The effect of gender on the peer review process

“In the grant peer review process we can distinguish various evaluation stages in which assessors judge applications on a rating scale. Bornmann & al. [2008] show that latent Markov models offer a fundamentally good opportunity to model statistically peer review processes. The main objective of this short communication is to test the influence of the applicants’ gender on the modeling of a peer review process by using latent Markov models. We found differences in transition probabilities from one stage to the other for applications for a doctoral fellowship submitted by male and female applicants.”

### **Carnes, Bartels, Kaatz, and Kolehmainen 2015**

“[Why is John More Likely to Become Department Chair Than Jennifer?](#)” *Transactions of the American Clinical and Climatological Association*, ND 2015. Vol. 126, pg. 197-214.

Gender bias in medical school and its effects on experience and leadership

“This article reviews some of our research on how gender stereotypes and their accompanying assumptions and expectations can influence the careers of male and female physicians and scientists in a myriad of subtle ways. Although stereotype-based cognitive biases may be invisible and unintentional, they nevertheless shape the experiences of women in academic medicine in ways that frequently constrain their opportunities. We present research on the following: 1) subtle differences in the evaluation of male and female medical students as revealed through text analysis of written evaluations at a critical career juncture, 2) how cultural assumptions about the way men and women should and should not behave influence medical residents’ experiences as leaders, and 3) how approaching gender bias among faculty in academic medicine, science, and engineering as a remedial habit can be successful in changing individual behaviors and in improving department climate.”

### **Council of Canadian Academies 2012**

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“Question: What policies and what societal, cultural, and institutional, economic, and/or other relevant factors influence the career trajectory of women researchers in Canadian universities and underlie gender disparities observed in Canadian university researcher’s statistical profile, by discipline area, rank, duty/position/stature, salary, tenure, research funding and or/any other relevant indicators?”

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## **Field**

### **General academia**



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## **Dasgupta and Asgari 2004**

["Seeing is believing: Exposure to counterstereotypic women leaders and its effect on the malleability of automatic gender stereotyping"](#). *Journal of Experimental Social Psychology*, 2004. Vol 40, pg. 642-658. Doi: <http://dx.doi.org/10.1016/j.jesp.2004.02.003>

Exposure to female leaders counteracts gender stereotyping

"Two studies tested the conditions under which social environments can undermine automatic gender stereotypic beliefs expressed by women. Study 1, a laboratory experiment, manipulated exposure to biographical information about famous female leaders. Study 2, a year-long field study, took advantage of pre-existing differences in the proportion of women occupying leadership positions (e.g., female professors) in two naturally occurring environments—a women's college and a coeducational college. Together, these studies investigated: (a) whether exposure to women in leadership positions can temporarily undermine women's automatic gender stereotypic beliefs, and (b) whether this effect is mediated by the frequency with which female leaders are encountered. Results revealed first that when women were in social contexts that exposed them to female leaders, they were less likely to express automatic stereotypic beliefs about their ingroup (Studies 1 and 2). Second, Study 2 showed that the long-term effect of social environments (women's college vs. coed college) on automatic gender stereotyping was mediated by the frequency of exposure to women leaders (i.e., female faculty). Third, some academic environments (e.g., classes in male-dominated disciplines like science and math) produced an increase in automatic stereotypic beliefs among students at the coed college but not at the women's college—importantly, this effect was mediated by the sex of the course instructors. Together,

these findings underscore the power of local environments in shaping women's nonconscious beliefs about their ingroup."

### **England 2010**

"[The Gender Revolution: Uneven and Stalled](https://doi.org/10.1177/0891243210361475)". Sociologists for Women in Society Feminist Lecture in *Gender and Society*, 2010. Vol. 24.2, pg. 149-166. Doi: <https://doi.org/10.1177/0891243210361475>

Why some women have taken "male" jobs, but males have not taken "female" jobs

"In this article, the author describes sweeping changes in the gender system and offers explanations for why change has been uneven. Because the devaluation of activities done by women has changed little, women have had strong incentive to enter male jobs, but men have had little incentive to take on female activities or jobs. The gender egalitarianism that gained traction was the notion that women should have access to upward mobility and to all areas of schooling and jobs. But persistent gender essentialism means that most people follow gender-typical paths except when upward mobility is impossible otherwise. Middle-class women entered managerial and professional jobs more than working-class women integrated blue-collar jobs because the latter were able to move up while choosing a "female" occupation; many mothers of middle-class women were already in the highest-status female occupations. The author also notes a number of gender-egalitarian trends that have stalled."

### **Gasser and Shaffer 2014**

"[Career Development of Women in Academia: Traversing the Leaky Pipeline](#)". *The Professional Counselor*, 2014. Vol. 4.4, pg. 332-352.

Model for women's experiences in academia, specifically to help with counseling

"Women's experiences in academia are laden with a fundamental set of issues pertaining to gender inequalities. A model reflecting women's career development and experiences around their academic pipeline (or career in academia) is presented. This model further conveys a new perspective on the experiences of women academicians before, during and after their faculty appointments and can help in career counseling. Specifically, this model provides career counselors with a framework to conceptualize the concerns of women clients who work in academic environments. Other implications for career counseling as well as limitations and future directions also are discussed."

### **Kattari 2015**

"[Examining Ableism in Higher Education through Social Dominance Theory and Social Learning Theory](https://doi.org/10.1007/s10755-015-9320-0)". *Innovative Higher Education*, 2015. Vol. 40, pg. 375-386. Doi: <https://doi.org/10.1007/s10755-015-9320-0>

Examining the need for different interactions and ally behavior between able-bodied professors and students with disabilities

“In most societies, some social identity groups hold a disproportionate amount of social, cultural, and economic power, while other groups hold little. In contemporary U.S. society, examples of this power are evident around issues of ability/disability, with able-bodied individuals wielding social dominance and people with disabilities experiencing a lack of social, cultural, and economic power. However, this relationship between able-bodied individuals and people with disabilities is neither static nor determinant; and through social modeling it may be altered to foster increased positive outcomes for people with disabilities, including both undergraduate and graduate students. As educators and institutional staff members frequently engage with students with disabilities, improving ally behavior and overall accessibility will increase rapport building with students, leading to more just and equitable interactions.”

### **Ledin, Bornmann, Gannon, and Wallon 2007**

“[A persistent problem: Traditional gender roles hold back female scientists](https://doi.org/10.1038/sj.embor.7401109)”. *European Molecular Biology Organization Reports*, 2007. Vol 8.11, pg. 982 -987. Doi: <https://doi.org/10.1038/sj.embor.7401109>

Gender’s influence on various parts of a scientist’s career

The researchers examined the success rate of female applicants who apply for the European Molecular Biology Organization's (EMBO) Long-Term Fellowships (LTFs) and the Young Investigator Programme (YIP), which is typically lower than the rate for male applicants. They investigated different factors which could result in this bias, including names on applications, language of CVs, and bibliometric data. They found that women typically have a lower publication rate. Finally, they investigate the possible causes for lower productivity, which can include social factors such as family. They conclude that a number of factors combine to affect women’s success rate.

### **Marsh, Jayasinghe, and Bond 2008**

“[Improving the Peer-Review Process for Grant Applications: Reliability, Validity, Bias, and Generalizability](http://dx.doi.org/10.1037/0003-066X.63.3.160)”. *American Psychologist*, 2008. Vol. 63.3, pg. 160-168. Doi: <http://dx.doi.org/10.1037/0003-066X.63.3.160>

Peer-review is a flawed process, and the “reader system” is more reliable.

“Peer review is a gatekeeper, the final arbiter of what is valued in academia, but it has been criticized in relation to traditional psychological research criteria of reliability, validity, generalizability, and potential biases. Despite a considerable literature, there is surprisingly little sound peer-review research examining these criteria or strategies for improving the process. This article summarizes the authors' research program with the Australian Research Council, which receives thousands of grant proposals from the social science, humanities, and science disciplines and reviews by assessors from all over the world. Using multilevel cross-classified models, the authors critically evaluated peer reviews of grant applications and potential biases associated with applicants, assessors, and their interaction (e.g., age, gender, university, academic rank, research team composition, nationality, experience). Peer reviews lacked reliability, but the only major systematic bias found involved the inflated, unreliable, and invalid

ratings of assessors nominated by the applicants themselves. The authors propose a new approach, the reader system, which they evaluated with psychology and education grant proposals and found to be substantially more reliable and strategically advantageous than traditional peer reviews of grant applications.”

### **Milkman, Akinola, and Chugh 2012**

“[Temporal Distance and Discrimination: An Audit Study in Academia](#)”. *Psychological Science*, 2012. Pg. 1-8. Doi: <https://doi.org/10.1177/0956797611434539>

Discrimination against women and minorities by professors when planning meetings

“Through a field experiment set in academia (with a sample of 6,548 professors), we found that decisions about distant-future events were more likely to generate discrimination against women and minorities (relative to Caucasian males) than were decisions about near-future events. In our study, faculty members received e-mails from fictional prospective doctoral students seeking to schedule a meeting either that day or in 1 week; students’ names signaled their race (Caucasian, African American, Hispanic, Indian, or Chinese) and gender. When the requests were to meet in 1 week, Caucasian males were granted access to faculty members 26% more often than were women and minorities; also, compared with women and minorities, Caucasian males received more and faster responses. However, these patterns were essentially eliminated when prospective students requested a meeting that same day. Our identification of a temporal discrimination effect is consistent with the predictions of construal-level theory and implies that subtle contextual shifts can alter patterns of race- and gender-based discrimination.”

### **Milkman, Akinola, and Chugh 2014**

“[What Happens Before? A Field Experiment Exploring How Pay and Representation Differentially Shape Bias on the Pathway into Organizations](#)”. *Journal of Applied Psychology*, 2014. Doi: <http://dx.doi.org/10.2139/ssrn.2063742>

Faculty responses to students discussing research opportunities were biased in favor of white males above all other categories

“Little is known about how discrimination manifests before individuals formally apply to organizations or how it varies within and between organizations. We address this knowledge gap through an audit study in academia of over 6,500 professors at top U.S. universities drawn from 89 disciplines and 259 institutions. In our experiment, professors were contacted by fictional prospective students seeking to discuss research opportunities prior to applying to a doctoral program. Names of students were randomly assigned to signal gender and race (Caucasian, Black, Hispanic, Indian, Chinese), but messages were otherwise identical. We hypothesized that discrimination would appear at the informal “pathway” preceding entry to academia and would vary by discipline and university as a function of faculty representation and pay. We found that when considering requests from prospective students seeking mentoring in the future, faculty were significantly more responsive to Caucasian males than to all other categories of students, collectively, particularly in higher-paying disciplines and private institutions.

Counterintuitively, the representation of women and minorities and discrimination were uncorrelated, a finding that suggests greater representation cannot be assumed to reduce discrimination. This research highlights the importance of studying decisions made before formal entry points into organizations and reveals that discrimination is not evenly distributed within and between organizations.”

#### **Miller 2016**

“‘[White sanction](#)’, institutional, group and individual interaction in the promotion and progression of black and minority ethnic academics and teachers in England”. *Power and Education*, 2016. Pg. 1-17. Doi: <https://doi.org/10.1177/1757743816672880>

Black and minority ethnic experiences in academia, and the perceived need for “white sanction”

“The promotion and progression of black and minority ethnic academics and teachers in England has been the subject of much debate. Although several theories have been put forward, racial equality has stood out as a major contributing factor. The experiences of black and minority ethnic academics and teachers in England are similar in terms of aspirations, and their experience of organisations also points to similar patterns of exclusions. This integrated study provides thick data from qualitative interviews with academics and teachers, theorised through the lens of whiteness theory and social identity theory, of their experience of promotion and progression, how they feel organisations respond to them and how they, in turn, are responding to promotion and progression challenges. There was a shared view amongst the participants that, for black and minority ethnic academics and teachers to progress in England, they need ‘white sanction’ – a form of endorsement from white colleagues that in itself has an enabling power.”

#### **Monzo and SooHoo 2014**

“[Translating the Academy: Learning the Racialized Languages of Academia](#)”. *Journal of Diversity in Higher Education*, 2014. Vol. 7.3, pg. 147-165. Doi: <http://dx.doi.org/10.1037/a0037400>

Experiences of two women of color in academia

“This article presents narratives of 2 women faculty of color, 1 early career Latina and the other tenured Asian American woman, regarding their ontological and epistemological struggles in academia, as well as the hope, impetus, and strategies for change that they constructed together. Drawing on a critical pedagogy perspective, mentoring is discussed as a praxis of allyship that develops organically within relationships that recognize each person’s strengths, provides instrumental knowledge about the academy, provides intellectual stimulation and reciprocal reflection, and is a collaborative endeavor that helps them to resist erasure and insert visibly diverse knowledge systems into people’s academic pursuits and responsibilities.”

#### **RAND 2005**

["Is There Gender Bias in Federal Grant Programs?"](#). *RAND Infrastructure, Safety, and Environment Research Brief*, 2005. RB-9147-NSF

Federal Grant agencies tend not to have gender differences in allocation except at NIH and with subsequent application rates.

"Based on analysis of three federal agency databases and two researcher surveys, we did not find gender differences in federal grant funding outcomes, with two exceptions. First, we found a gender gap in the amount of funding on average that females receive relative to their male counterparts at NIH, although important caveats are associated with that finding. Second, we found a gender gap in subsequent application rates. Suggestions for future data gathering and analysis are discussed."

### **Shields, Zawadzki, and Johnson 2011**

["The Impact of the Workshop Activity for Gender Equity Simulation in the Academy \(WAGES–Academic\) in Demonstrating Cumulative Effects of Gender Bias"](#). *Journal of Diversity in Higher Education*, 2011. Vol. 4.2, pg. 120-129. Doi: <https://doi.org/10.1037/a0022953>

WAGES-Academic training worked to help undergrads unlearn unconscious bias behaviors.

"We report experimental evaluation of the Workshop Activity for Gender Equity Simulation in the Academy (WAGES–Academic), a brief, experiential simulation of the cumulative effects of unconscious bias in the academic workplace. We predicted that participants who played WAGES–Academic would demonstrate significantly increased knowledge and retention of gender equity issues in the academic workplace compared with participants in a control condition. Baseline information on general knowledge of workplace gender equity issues was obtained from 1,254 undergraduates. In the second phase, 144 were randomly assigned to complete either WAGES–Academic or a control task, and the immediate effects of the activities were measured. Participants were contacted 7–11 days later to complete an online measure of knowledge retention. Compared with a control condition, WAGES–Academic increased knowledge and retention. This effect occurred irrespective of prior level of sexist beliefs, participant gender, or whether the participant had been on the advantaged or disadvantaged team. Potential use and testing of WAGES–Academic with university faculty and administrators are discussed."

### **Steele and Aronson 1995**

["Stereotype Threat and the Intellectual Test Performance of African Americans"](#). *Journal of Personality and Social Psychology*, 1995. Vol. 69.5, pg. 797-811. Doi: <http://dx.doi.org/10.1037/0022-3514.69.5.797>

Black students will underperform when feeling the pressure of negative stereotypes.

"Stereotype threat is being at risk of confirming, as self-characteristic, a negative stereotype about one's group. Studies 1 and 2 varied the stereotype vulnerability of Black participants taking a difficult verbal test by varying whether or not their performance was ostensibly diagnostic of ability, and thus, whether or not they were at risk of fulfilling the racial stereotype about their intellectual ability. Reflecting the pressure of this vulnerability, Blacks underperformed in relation to Whites in the ability-diagnostic

condition but not in the nondiagnostic condition (with Scholastic Aptitude Tests controlled). Study 3 validated that ability-diagnostics cognitively activated the racial stereotype in these participants and motivated them not to conform to it, or to be judged by it. Study 4 showed that mere salience of the stereotype could impair Blacks' performance even when the test was not ability diagnostic. The role of stereotype vulnerability in the standardized test performance of ability-stigmatized groups is discussed."

### **Valian 2005**

["Beyond Gender Schemas: Improving the Advancement of Women in Academia"](#). *Hypatia: A Journal of Feminist Philosophy*, 2005. Vol. 20.3, pg. 198-213. Doi: <https://doi.org/10.1111/j.1527-2001.2005.tb00495.x>

How to advance women in academia

The author describes the discrepancy in experiences based on gender, examining the experimental data of various studies. She describes the cumulative impact of these experiences, as well as their impact on self-perception. Finally, she discusses why gender equity is important and how one can increase it.

## **Anthropology/Sociology/Linguistics**

### **Davenport and Snyder 1995**

["Who Cites Women? Whom Do Women Cite?: An Exploration of Gender and Scholarly Citation in Sociology"](#). *Journal of Documentation*, 1995. Vol. 51.4, pg. 404-410. <http://dx.doi.org/10.1108/eb026958>

Gender bias in sociological citation

"The authors offer a brief analysis of citation practice in twenty-five American sociological journals, in an attempt to explore claims that citation may show gender bias. Their work follows previous surveys of gender and citation and publication in the social sciences which suggest that women perform less well than men in both areas. The findings of this study suggest that there is indeed gender bias in citation in sociology, and the authors offer some hypotheses to explain the phenomenon that might be tested in further research."

### **Lutz 1990**

["the erasure of women's writing in sociocultural anthropology"](#) *Journal of the American Ethnological Society*, 1990. Vol. 17.4, pg. 611-627. Doi: <https://doi.org/10.1525/ae.1990.17.4.02a00010>

Female authors are cited less frequently in sociology than male authors.

"Writing, citation, and other canon-setting patterns in the recent (1977–86) literature of sociocultural anthropology reveal the impact of gender relations. In this article, citation is treated as a social practice which, among other things, legitimizes the voice of the cited author. While women produce a substantial

proportion of the work available for citation, the proportion of women authors cited is lower than would be expected on that basis, and it varies with the citing author's gender. Annual meetings programs also show a tendency for women to be extremely active, but the frequent focus on gender and feminism is not reflected in overviews of the field. Conclusions are drawn about the relative marginalization of women's work and about the relationship between the warranting of women's academic work and the public or private context of its evaluation."

#### **McElhinny, Hols, Holtzkeener, and Unger 2003**

["Gender, publication and citation in sociolinguistics and linguistic anthropology: The construction of a scholarly canon"](#) *Language in Society*, 2003. Vol. 32.3, pg. 299-328. Doi: <http://dx.doi.org/10.1017/S0047404503323012>

Lower rate of publication for female authors in sociolinguistics and linguistic anthropology

"Feminist scholars have begun to ask how existing conceptual schemes and organizational structures in academic disciplines have excluded women and feminist ideas, and to provide suggestions for transformation. One strand of this work has been the exploration of how canons of thought are constructed in such fields as economics, sociology, and sociocultural anthropology. This article begins such an investigation for sociolinguistics and linguistic anthropology by reviewing how gender correlates with publication and citation over a 35-year period (1965–2000) in five key journals, and in 16 textbooks published in the 1990s. It describes some marked differences in the publication of works by women and on gender in the five journals, as well as some significant differences in the degree to which men and women cite the work of women. It also considers how the rate of publication of articles on sex, gender, and women is correlated with publication of female authors. It concludes with a discussion of the implications of this study for changing institutional practices in our field."

## **Biology**

#### **Budden, Tregenza, Aarssen, Koricheva, Leimu, and Lortie 2008**

["Double-Blind Review Favours Increased Representation of Female Authors"](#). *Trends in Ecology and Evolution*, 2008. Vol. 23.1, pg. 4–6. Doi: <http://dx.doi.org/10.1016/j.tree.2007.07.008>

Double-blind review for journals increases the number of female submissions published.

"Double-blind peer review, in which neither author nor reviewer identity are revealed, is rarely practised in ecology or evolution journals. However, in 2001, double-blind review was introduced by the journal *Behavioral Ecology*. Following this policy change, there was a significant increase in female first-authored papers, a pattern not observed in a very similar journal that provides reviewers with author information. No negative effects could be identified, suggesting that double-blind review should be considered by other journals."

#### **Grunspan, Eddy, Brownell, Wiggins, Crowe, and Goodreau 2016**



[“Males Under-Estimate Academic Performance of Their Female Peers in Undergraduate Biology Classrooms”](#). *PLoS One*, 2016. Vol. 11.2. Doi: <https://dx.doi.org/10.1371/journal.pone.0148405>

Male underestimation of female peers in biology

“Women who start college in one of the natural or physical sciences leave in greater proportions than their male peers. The reasons for this difference are complex, and one possible contributing factor is the social environment women experience in the classroom. Using social network analysis, we explore how gender influences the confidence that college-level biology students have in each other’s mastery of biology. Results reveal that males are more likely than females to be named by peers as being knowledgeable about the course content. This effect increases as the term progresses, and persists even after controlling for class performance and outspokenness. The bias in nominations is specifically due to males over-nominating their male peers relative to their performance. The over-nomination of male peers is commensurate with an overestimation of male grades by 0.57 points on a 4 point grade scale, indicating a strong male bias among males when assessing their classmates. Females, in contrast, nominated equitably based on student performance rather than gender, suggesting they lacked gender biases in filling out these surveys. These trends persist across eleven surveys taken in three different iterations of the same Biology course. In every class, the most renowned students are always male. This favoring of males by peers could influence student self-confidence, and thus persistence in this STEM discipline.”

**Jones, Fanson, Lanfear, Symonds, and Higgie 2014**

[“Gender differences in conference presentations: a consequence of self-selection?”](#) *PeerJ*, 2014. Doi: <https://doi.org/10.7717/peerj.627>

Conference presentations demonstrate the impacts of gender bias and visibility in evolutionary biology.

“Women continue to be under-represented in the sciences, with their representation declining at each progressive academic level. These differences persist despite long-running policies to ameliorate gender inequity. We compared gender differences in exposure and visibility at an evolutionary biology conference for attendees at two different academic levels: student and post-PhD academic. Despite there being almost exactly a 1:1 ratio of women and men attending the conference, we found that when considering only those who presented talks, women spoke for far less time than men of an equivalent academic level: on average student women presented for 23% less time than student men, and academic women presented for 17% less time than academic men. We conducted more detailed analyses to tease apart whether this gender difference was caused by decisions made by the attendees or through bias in evaluation of the abstracts. At both academic levels, women and men were equally likely to request a presentation. However, women were more likely than men to prefer a short talk, regardless of academic level. We discuss potential underlying reasons for this gender bias, and provide recommendations to avoid similar gender biases at future conferences.”

**Ledin, Bornmann, Gannon, and Wallon. 2007**

[“A persistent problem: Traditional gender roles hold back female scientists”](#). *European Molecular Biology Organization Reports*, 2007. Vol 8.11, pg. 982 -987. Doi: <https://doi.org/10.1038/sj.embor.7401109>

Gender's influence on various parts of a scientist's career

The researchers examined the success rate of female applicants who apply for the European Molecular Biology Organization's (EMBO) Long-Term Fellowships (LTFs) and the Young Investigator Programme (YIP), which is typically lower than the rate for male applicants. They investigated different factors which could result in this bias, including names on applications, language of CVs, and bibliometric data. They found that women typically have a lower publication rate. Finally, they investigate the possible causes for lower productivity, which can include social factors such as family. They conclude that a number of factors combine to affect women's success rate.

### **Moss-Racusin, Dovidio, Brescoll, Graham, and Handelsman 2012**

[“Science faculty's subtle gender biases favor male students”](#). *PNAS*, 2012. Vol 109.41. doi: <https://doi.org/10.1073/pnas.1211286109>

Bias against lab manager applications with female names, rather than male names

“Despite efforts to recruit and retain more women, a stark gender disparity persists within academic science. Abundant research has demonstrated gender bias in many demographic groups, but has yet to experimentally investigate whether science faculty exhibit a bias against female students that could contribute to the gender disparity in academic science. In a randomized double-blind study (n = 127), science faculty from research-intensive universities rated the application materials of a student—who was randomly assigned either a male or female name—for a laboratory manager position. Faculty participants rated the male applicant as significantly more competent and hireable than the (identical) female applicant. These participants also selected a higher starting salary and offered more career mentoring to the male applicant. The gender of the faculty participants did not affect responses, such that female and male faculty were equally likely to exhibit bias against the female student. Mediation analyses indicated that the female student was less likely to be hired because she was viewed as less competent. We also assessed faculty participants' preexisting subtle bias against women using a standard instrument and found that preexisting subtle bias against women played a moderating role, such that subtle bias against women was associated with less support for the female student, but was unrelated to reactions to the male student. These results suggest that interventions addressing faculty gender bias might advance the goal of increasing the participation of women in science.”

## **Biomed/Medicine**

**Carnes, Devine, Manwell, Byars-Winston, Fine, Ford, Forscher, Isaac, Kaatz, Magua, Palta, and Sheridan 2015**

[“Effect of an Intervention to Break the Gender Bias Habit for Faculty at One Institution: A Cluster Randomized, Controlled Trial”](https://doi.org/10.1097/ACM.0000000000000552). *Academic Medicine*, Feb. 2015. Vol. 90.2 pg. 221-230. Doi: <https://doi.org/10.1097/ACM.0000000000000552>

Intervention can help change implicit bias in university departments, specifically academic medicine, science, and engineering.

#### “Purpose

Despite sincere commitment to egalitarian, meritocratic principles, subtle gender bias persists, constraining women’s opportunities for academic advancement. The authors implemented a pair-matched, single-blind, cluster-randomized, controlled study of a gender bias habit-changing intervention at a large public university.

#### Method

Participants were faculty in 92 departments or divisions at the University of Wisconsin-Madison. Between September 2010 and March 2012, experimental departments were offered a gender bias habit-changing intervention as a 2.5 hour workshop. Surveys measured gender bias awareness; motivation, self-efficacy, and outcome expectations to reduce bias; and gender equity action. A timed word categorization task measured implicit gender/leadership bias. Faculty completed a worklife survey before and after all experimental departments received the intervention. Control departments were offered workshops after data were collected.

#### Results

Linear mixed-effects models showed significantly greater changes post-intervention for faculty in experimental vs. control departments on several outcome measures, including self-efficacy to engage in gender equity promoting behaviors ( $P = .013$ ). When  $\geq 25\%$  of a department’s faculty attended the workshop (26 of 46 departments), significant increases in self-reported action to promote gender equity occurred at 3 months ( $P = .007$ ). Post-intervention, faculty in experimental departments expressed greater perceptions of fit ( $P = .024$ ), valuing of their research ( $P = .019$ ), and comfort in raising personal and professional conflicts ( $P = .025$ ).

#### Conclusions

An intervention that facilitates intentional behavioral change can help faculty break the gender bias habit and change department climate in ways that should support the career advancement of women in academic medicine, science, and engineering.”

#### **Carnes, Bartels, Kaatz, and Kolehmainen 2015**

[“Why is John More Likely to Become Department Chair Than Jennifer?”](#) *Transactions of the American Clinical and Climatological Association*, ND 2015. Vol. 126, pg. 197-214.

Gender bias in medical school and its effects on experience and leadership

“This article reviews some of our research on how gender stereotypes and their accompanying assumptions and expectations can influence the careers of male and female physicians and scientists in a myriad of subtle ways. Although stereotype-based cognitive biases may be invisible and unintentional, they nevertheless shape the experiences of women in academic medicine in ways that frequently constrain their opportunities. We present research on the following: 1) subtle differences in the evaluation of male and female medical students as revealed through text analysis of written evaluations at a critical career juncture, 2) how cultural assumptions about the way men and women should and should not behave influence medical residents’ experiences as leaders, and 3) how approaching gender bias among faculty in academic medicine, science, and engineering as a remedial habit can be successful in changing individual behaviors and in improving department climate.”

### **Corrice 2009**

“[Unconscious bias in faculty and leadership recruitment: A literature review](#)” *Association of American Medical Colleges Analysis in Brief*, 2009. Vol. 9.2.

“Although women and minorities have made significant strides in achieving equality in the workplace, they are still underrepresented in the upper strata of organizations, including senior faculty and leadership positions at medical schools and teaching hospitals. Within the last decade, social science researchers have pursued the theory of “unconscious bias” as one barrier to workplace equality that may persist despite a general commitment to increase diversity across the academic medicine workforce and other organizations. This Analysis in Brief reviews the scientific literature on the theory of unconscious bias, explores the role of unconscious bias in job recruitment and evaluations, and offers suggestions for search committees and others involved in hiring decisions at medical schools and teaching hospitals.”

### **Jagsi, Guancial, Worobey, Henault, Chang, Starr, Tarbell, and Hylek 2006**

“[The 'Gender Gap' in Authorship of Academic Medical Literature - A 35-Year Perspective](#)”. *The New England Journal of Medicine*, 2006. Vol. 355, pg. 281-287. Doi: <https://doi.org/10.1056/NEJMsa053910>

Increase in female authors in medical journals, but women are still a minority

#### **“Background**

Participation of women in the medical profession has increased during the past four decades, but issues of concern persist regarding disparities between the sexes in academic medicine. Advancement is largely driven by peer-reviewed original research, so we sought to determine the representation of female physician-investigators among the authors of selected publications during the past 35 years.

#### **Methods**

Original articles from six prominent medical journals — the *New England Journal of Medicine (NEJM)*, the *Journal of the American Medical Association (JAMA)*, the *Annals of Internal Medicine (Ann Intern Med)*, the *Annals of Surgery (Ann Surg)*, *Obstetrics & Gynecology (Obstet Gynecol)*, and the *Journal of Pediatrics (J Pediatr)* — were categorized according to the sex of both the first and the senior (last listed)

author. Sex was also determined for the authors of guest editorials in *NEJM* and *JAMA*. Data were collected for the years 1970, 1980, 1990, 2000, and 2004. The analysis was restricted to authors from U.S. institutions holding M.D. degrees.

## Results

The sex was determined for 98.5 percent of the 7249 U.S. authors of original research with M.D. degrees. The proportion of first authors who were women increased from 5.9 percent in 1970 to 29.3 percent in 2004 ( $P < 0.001$ ), and the proportion of senior authors who were women increased from 3.7 percent to 19.3 percent ( $P < 0.001$ ) during the same period. The proportion of authors who were women increased most sharply in *Obstet Gynecol* (from 6.7 percent of first authors and 6.8 percent of senior authors in 1970 to 40.7 percent of first authors and 28.0 percent of senior authors in 2004) and *J Pediatr* (from 15.0 percent of first authors and 4.3 percent of senior authors in 1970 to 38.9 percent of first authors and 38.0 percent of senior authors in 2004) and remained low in *Ann Surg* (from 2.3 percent of first authors and 0.7 percent of senior authors in 1970 to 16.7 percent of first authors and 6.7 percent of senior authors in 2004). In 2004, 11.4 percent of the authors of guest editorials in *NEJM* and 18.8 percent of the authors of guest editorials in *JAMA* were women.

## Conclusions

Over the past four decades, the proportion of women among both first and senior physician-authors of original research in the United States has significantly increased. Nevertheless, women still compose a minority of the authors of original research and guest editorials in the journals studied."

## Lincoln, Pincus, Koster, and Leboy 2012

"[The Matilda Effect in science: Awards and prizes in the US, 1990s and 2000s](https://doi.org/10.1177/0306312711435830)". *Social Studies of Science*, 2012. Vol. 42.2, pg. 307-320. Doi: <https://doi.org/10.1177/0306312711435830>

Women continue to receive less recognition than men in the sciences; one example of this is in awards allocated.

"Science is stratified, with an unequal distribution of research facilities and rewards among scientists. Awards and prizes, which are critical for shaping scientific career trajectories, play a role in this stratification when they differentially enhance the status of scientists who already have large reputations: the 'Matthew Effect'. Contrary to the Mertonian norm of universalism – the expectation that the personal attributes of scientists do not affect evaluations of their scientific claims and contributions – in practice, a great deal of evidence suggests that the scientific efforts and achievements of women do not receive the same recognition as do those of men: the 'Matilda Effect'. Awards in science, technology, engineering and medical (STEM) fields are not immune to these biases. We outline the research on gender bias in evaluations of research and analyze data from 13 STEM disciplinary societies. While women's receipt of professional awards and prizes has increased in the past two decades, men continue to win a higher proportion of awards for scholarly research than expected based on their representation in the nomination pool. The results support the powerful twin influences of implicit bias and committee chairs as contributing factors. The analysis sheds light on the relationship of external social factors to women's science careers and helps to explain why women are severely

underrepresented as winners of science awards. The ghettoization of women's accomplishments into a category of 'women-only' awards also is discussed."

### **Trix and Psenka 2003**

"[Exploring the Color of Glass: Letters of Recommendation for Female and Male Medical Faculty](#)". *Discourse Society*. Vol 3.2, pg. 191-220. 2003. Doi: <https://doi.org/10.1177/0957926503014002277>

Language of letters of reference for medical faculty differs by gender of the person for whom it is written.

"This study examines over 300 letters of recommendation for medical faculty at a large American medical school in the mid-1990s, using methods from corpus and discourse analysis, with the theoretical perspective of gender schema from cognitive psychology. Letters written for female applicants were found to differ systematically from those written for male applicants in the extremes of length, in the percentages lacking in basic features, in the percentages with doubt raisers (an extended category of negative language, often associated with apparent commendation), and in frequency of mention of status terms. Further, the most common semantically grouped possessive phrases referring to female and male applicants ('her teaching,' 'his research') reinforce gender schema that tend to portray women as teachers and students, and men as researchers and professionals."

### **Wenneras and Wold 1997**

"[Nepotism and sexism in peer-review](#)" *Nature*, 1997. Vol 387.6631, pg. 341-343. Doi: <http://doi.org/10.1038/387341a0>

Gender bias affects post-doctoral fellowships in Sweden. This was a landmark study on unconscious bias.

"Throughout the world, women leave their academic careers to a far greater extent than their male colleagues. In Sweden, for example, women are awarded 44 per cent of biomedical PhDs but hold a mere 25 per cent of the postdoctoral positions. It used to be thought that once there were enough entry-level female scientists, the male domination of the upper echelons of academic research would automatically diminish. But this has not happened in the biomedical field, where disproportionate numbers of men still hold higher academic positions, despite the significant numbers of women who have entered this research field since the 1970s."

## **Chemistry**

### **Moss-Racusin, Dovidio, Brescoll, Graham, and Handelsman 2012**

"[Science faculty's subtle gender biases favor male students](#)". *PNAS*, 2012. Vol 109.41. doi: <https://doi.org/10.1073/pnas.1211286109>

Bias against lab manager applications with female names, rather than male names

“Despite efforts to recruit and retain more women, a stark gender disparity persists within academic science. Abundant research has demonstrated gender bias in many demographic groups, but has yet to experimentally investigate whether science faculty exhibit a bias against female students that could contribute to the gender disparity in academic science. In a randomized double-blind study (n = 127), science faculty from research-intensive universities rated the application materials of a student—who was randomly assigned either a male or female name—for a laboratory manager position. Faculty participants rated the male applicant as significantly more competent and hireable than the (identical) female applicant. These participants also selected a higher starting salary and offered more career mentoring to the male applicant. The gender of the faculty participants did not affect responses, such that female and male faculty were equally likely to exhibit bias against the female student. Mediation analyses indicated that the female student was less likely to be hired because she was viewed as less competent. We also assessed faculty participants’ preexisting subtle bias against women using a standard instrument and found that preexisting subtle bias against women played a moderating role, such that subtle bias against women was associated with less support for the female student, but was unrelated to reactions to the male student. These results suggest that interventions addressing faculty gender bias might advance the goal of increasing the participation of women in science.”

## Communications

### Knobloch-Westerwick and Glynn 2013

“[The Matilda Effect – Role Congruity Effects on Scholarly Communication: A Citation Analysis of Communication Research and Journal of Communication Articles](#)”. *Communication Research*, 2013. Vol. 40.1, pg. 3-26. Doi: <https://doi.org/10.1177/0093650211418339>

Male communication scientists receive more citations than female scientists.

“Using role congruity theory as the basis for the study, an analysis of 1,020 articles published 1991-2005 in *Communication Research* and *Journal of Communication*, as well as the ISI citations these articles received and the citations these articles included, was conducted. In line with a hypothesized “Matilda effect” (underrecognition of female scientists), articles authored by female communication scientists received fewer citations than articles authored by males. Hypotheses on moderating impacts of research topic, author productivity, and citing author’s sex, as well as on change in the effect’s extent across time were derived from the theoretical framework. Networking conceptualizations led to an additional hypothesis. Five of six hypotheses were supported.”

### Knobloch-Westerwick, Glynn, and Hugu 2013

“[The Matilda Effect in Science Communication: An Experiment on Gender Bias in Publication Quality Perceptions and Collaboration Interest](#)”. *Science Communication*, 2013. Vol 35, pg. 603-625. Doi: <https://doi.org/10.1177/1075547012472684>

Gender affects perception of the author of scientific conference abstracts

“An experiment with 243 young communication scholars tested hypotheses derived from role congruity theory regarding impacts of author gender and gender typing of research topics on perceived quality of scientific publications and collaboration interest. Participants rated conference abstracts ostensibly authored by females or males, with author associations rotated. The abstracts fell into research areas perceived as gender-typed or gender-neutral to ascertain impacts from gender typing of topics. Publications from male authors were associated with greater scientific quality, in particular if the topic was male-typed. Collaboration interest was highest for male authors working on male-typed topics. Respondent sex did not influence these patterns.”

## **Criminal Justice**

**Stack 2002**

“[Gender and Scholarly Productivity: The case of criminal justice](http://dx.doi.org/10.1016/S0047-2352(01)00134-9)”. *Journal of Criminal Justice*, 2002. Vol. 30, pg. 175-182. Doi: [http://dx.doi.org/10.1016/S0047-2352\(01\)00134-9](http://dx.doi.org/10.1016/S0047-2352(01)00134-9)

Factors limiting female publishing in the field of criminal justice

“Research on scholarly productivity in science has consistently found that women scientists publish only 50–60 percent as many scholarly papers as men. Common limitations of this work include a focus on the hard sciences to the neglect of other fields and lack of controls for type of location or employment. This study contributed to the literature by investigating a soft science (criminal justice) and focusing on a particular location: scientists in tenure track, academic positions. Further, it was contended that females were more integrated into the male research networks in criminal justice than in the hard sciences. This greater integration should narrow the gap between male and female productivity. Data were based on eighty-nine faculty in Master's-level criminal justice departments. The results of a multiple regression analysis indicated that gender was not significantly associated with either the number of articles or the impact (citations) of scholarly work. The leading predictors of scholarly productivity included faculty rank and year of PhD. The full model explained 37 percent of the variance in article production and 44 percent of the variance in scholarly impact.”

## **Ecology**

**Budden, Tregenza, Aarssen, Koricheva, Leimu, and Lortie 2008**

“[Double-Blind Review Favours Increased Representation of Female Authors](http://dx.doi.org/10.1016/j.tree.2007.07.008)”. *Trends in Ecology and Evolution*, 2008. Vol. 23.1, pg. 4–6. Doi: <http://dx.doi.org/10.1016/j.tree.2007.07.008>

Double-blind review for journals increases the number of female submissions published.

“Double-blind peer review, in which neither author nor reviewer identity are revealed, is rarely practised in ecology or evolution journals. However, in 2001, double-blind review was introduced by the journal *Behavioral Ecology*. Following this policy change, there was a significant increase in female first-authored papers, a pattern not observed in a very similar journal that provides reviewers with author



information. No negative effects could be identified, suggesting that double-blind review should be considered by other journals.”

## Engineering

**Carnes, Devine, Manwell, Byars-Winston, Fine, Ford, Forscher, Isaac, Kaatz, Magua, Palta, and Sheridan 2015**

[“Effect of an Intervention to Break the Gender Bias Habit for Faculty at One Institution: A Cluster Randomized, Controlled Trial”](#). *Academic Medicine*, Feb. 2015. Vol. 90.2 pg. 221-230. Doi: <https://doi.org/10.1097/ACM.0000000000000552>

Intervention can help change implicit bias in university departments, specifically academic medicine, science, and engineering.

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Despite sincere commitment to egalitarian, meritocratic principles, subtle gender bias persists, constraining women’s opportunities for academic advancement. The authors implemented a pair-matched, single-blind, cluster-randomized, controlled study of a gender bias habit-changing intervention at a large public university.

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### Conclusions

An intervention that facilitates intentional behavioral change can help faculty break the gender bias habit and change department climate in ways that should support the career advancement of women in academic medicine, science, and engineering.”

## Gender/Race/Conflict Studies

**Kretschmer, Kundra, deB. Beaver, and Kretschmer 2012**

[“Gender bias in journals of gender studies”](#). *Scientometrics*, 2012. Vol 93.1, pg.135–150. Doi: <https://doi.org/10.1007/s11192-012-0661-5>

Gender bias changes by discipline: there is less bias against female authors in gender studies publications.

“The causes of gender bias favoring men in scientific and scholarly systems are complex and related to overall gender relationships in most of the countries of the world. An as yet unanswered question is whether in research publication gender bias is equally distributed over scientific disciplines and fields or if that bias reflects a closer relation to the subject matter. We expected less gender bias with respect to subject matter, and so analysed 14 journals of gender studies using several methods and indicators. The results confirm our expectation: the very high position of women in co-operation is striking; female scientists are relatively overrepresented as first authors in articles. Collaboration behaviour in gender studies differs from that of authors in PNAS. The pattern of gender studies reflects associations between authors of different productivity, or “masters” and “apprentices” but the PNAS pattern reflects associations between authors of roughly the same productivity, or “peers”. It would be interesting to extend the analysis of these three-dimensional collaboration patterns further, to see whether a similar characterization holds, what it might imply about the patterns of authorship in different areas, what those patterns might imply about the role of collaboration, and whether there are differences between females and males in collaboration patterns.”

**Rudman, Ashmore, and Gary 2001**

[“‘Unlearning’ automatic biases: The malleability of implicit prejudice and stereotypes”](#). *Journal of Personality and Social Psychology*, 2001. Vol. 81.5 pg. 856–868. Doi: <http://dx.doi.org/10.1037/0022-3514.81.5.856>

Diversity education is successful in reducing biases and implicit prejudice.

“The present research suggests that automatic and controlled intergroup biases can be modified through diversity education. In 2 experiments, students enrolled in a prejudice and conflict seminar showed significantly reduced implicit and explicit anti-Black biases, compared with control students. The authors explored correlates of prejudice and stereotype reduction. In each experiment, seminar students' implicit and explicit change scores positively covaried with factors suggestive of affective and cognitive processes, respectively. The findings show the malleability of implicit prejudice and stereotypes and suggest that these may effectively be changed through affective processes.”

## Math

**Lincoln, Pincus, Koster, and Leboy 2012**

[“The Matilda Effect in science: Awards and prizes in the US, 1990s and 2000s”](#). *Social Studies of Science*, 2012. Vol. 42.2, pg. 307-320. Doi: <https://doi.org/10.1177/0306312711435830>

Women continue to receive less recognition than men in the sciences; one example of this is in awards allocated.

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## Philosophy

**Haswell and Haswell 1996**

[“Gender Bias and Critique of Student Writing”](#). *Assessing Writing*, 1996. Vol. 3.1, pg. 31-83. Doi: [https://doi.org/10.1016/S1075-2935\(96\)90004-5](https://doi.org/10.1016/S1075-2935(96)90004-5)

The effect of gender on the critique of student writing

“The main purpose of this empirical investigation into gender and writing instruction is to locate ways that the critique of readers may be affected by their foreknowledge of the student writer's sex. Thirty-two teachers and 32 students evaluated and diagnosed 60 student essays, neither overtly marked as to the sex of the writer. Independent variables controlled for were sex of reader, sex of the interviewer who prompted response during the taped session, professional status of participant (student or teacher), and knowledge of author's biological sex by participant (prior knowledge or no prior knowledge). Statistical analysis found gender interacting with all these variables. Among other associations, readers spontaneously constructed the author's sex even when they had not been informed of it; they rated the essays lower when they knew the writer was of their own sex, as measured by holistic rating and percentage of positive critique; they showed an anti-male bias as measured by holistic rating, and an anti-feminine bias as measured by attribution of agency to the writing; and they tended to suppress gender, as measured by the amount of agency that they passivized or made neutral. In sum, the study found evidence for the active presence of gender effects, especially via polarized gender stereotypes, as students and teachers appraise student writing.”

## Physics

**Moss-Racusin, Dovidio, Brescoll, Graham, and Handelsman 2012**

["Science faculty's subtle gender biases favor male students"](https://doi.org/10.1073/pnas.1211286109). *PNAS*, 2012. Vol 109.41. doi: <https://doi.org/10.1073/pnas.1211286109>

Bias against lab manager applications with female names, rather than male names

"Despite efforts to recruit and retain more women, a stark gender disparity persists within academic science. Abundant research has demonstrated gender bias in many demographic groups, but has yet to experimentally investigate whether science faculty exhibit a bias against female students that could contribute to the gender disparity in academic science. In a randomized double-blind study ( $n = 127$ ), science faculty from research-intensive universities rated the application materials of a student—who was randomly assigned either a male or female name—for a laboratory manager position. Faculty participants rated the male applicant as significantly more competent and hireable than the (identical) female applicant. These participants also selected a higher starting salary and offered more career mentoring to the male applicant. The gender of the faculty participants did not affect responses, such that female and male faculty were equally likely to exhibit bias against the female student. Mediation analyses indicated that the female student was less likely to be hired because she was viewed as less competent. We also assessed faculty participants' preexisting subtle bias against women using a standard instrument and found that preexisting subtle bias against women played a moderating role, such that subtle bias against women was associated with less support for the female student, but was unrelated to reactions to the male student. These results suggest that interventions addressing faculty gender bias might advance the goal of increasing the participation of women in science."

**Towers 2008**

["A Case Study of Gender Bias at the Postdoctoral Level in Physics, and its Resulting Impact on the Academic Career Advancement of Females"](https://arxiv.org/abs/0804.2026). 2008. Available from [arXiv.org:0804.2026](https://arxiv.org/abs/0804.2026)

Women get only 1/3 of conference presentations even though they are more productive than male counterparts. This also affects career advancement.

"This case study of a typical U.S. particle physics experiment explores the issues of gender bias and how it affects the academic career advancement prospects of women in the field of physics beyond the postdoctoral level; we use public databases to study the career paths of the full cohort of 57 former postdoctoral researchers on the Run II Dzero experiment to examine if males and females were treated in a gender-blind fashion on the experiment. The study finds that the female researchers were on average significantly more productive compared to their male peers, yet were allocated only 1/3 the amount of conference presentations based on their productivity. The study also finds that the dramatic gender bias in allocation of conference presentations appeared to have significant negative impact on the academic career advancement of the females. The author has a PhD in particle physics and worked for six years as a postdoctoral research scientist, five of which were spent collaborating at Fermilab. She is currently completing a graduate degree in statistics."

## Psychology

**Ewing, Stukas Jr., and Sheehan 2003**

["Student Prejudice Against Gay Male and Lesbian Lecturers"](#). *The Journal of Social Psychology*, 2003. Vol. 143.5, pg. 569-579. Doi: <http://dx.doi.org/10.1080/00224540309598464>

Perceptions of lecturers based on sexual orientation

"The authors examined whether gay men and lesbians are evaluated more negatively than individuals of unspecified sexual orientation when attributional ambiguity surrounds evaluations and whether they are evaluated similarly to unspecified others when no attributional ambiguity is present. One male and one female lecturer delivered either a strong or a weak lecture to students who either (a) believed that the lecturer was a gay man or a lesbian or (b) did not receive sexual orientation information. Contrary to predictions, the quality of the lecture did not influence the ratings of known gay male and lesbian lecturers, although lecture quality strongly influenced ratings of lecturers whose sexual orientation was unspecified. After strong lectures, participants rated known gay male and lesbian lecturers more negatively than they did lecturers whose sexual orientation was unspecified. After weak lectures, participants rated known gay male and lesbian lecturers more positively than they did the others. The authors discussed the possibility that students might moderate their ratings to avoid discriminating against gay and lesbian lecturers."

**Steinpreis, Anders, and Ritzke 1999**

["The Impact of Gender on the Review of the Curricula Vitae of Job Applicants and Tenure Candidates: A National Empirical Study"](#). *Sex Roles*, 1999. Vol. 41 pg. 509-528. Doi: <https://doi.org/10.1023/A:1018839203698>

Gender of names on CVs affects psychology job and tenure applicants

"The purpose of this study was to determine some of the factors that influence outside reviewers and search committee members when they are reviewing curricula vitae, particularly with respect to the gender of the name on the vitae. The participants in this study were 238 male and female academic psychologists who listed a university address in the 1997 Directory of the American Psychological Association. They were each sent one of four versions of a curriculum vitae (i.e., female job applicant, male job applicant, female tenure candidate, and male tenure candidate), along with a questionnaire and a self-addressed stamped envelope. All the curricula vitae actually came from a real-life scientist at two different stages in her career, but the names were changed to traditional male and female names. Although an exclusively between-groups design was used to avoid sparking gender conscious responding, the results indicate that the participants were clearly able to distinguish between the qualifications of the job applicants versus the tenure candidates, as evidenced by suggesting higher starting salaries, increased likelihood of offering the tenure candidates a job, granting them tenure, and greater respect for their teaching, research, and service records. Both men and women were more likely to vote to hire a male job applicant than a female job applicant with an identical record. Similarly, both

sexes reported that the male job applicant had done adequate teaching, research, and service experience compared to the female job applicant with an identical record. In contrast, when men and women examined the highly competitive curriculum vitae of the real-life scientist who had gotten early tenure, they were equally likely to tenure the male and female tenure candidates and there was no difference in their ratings of their teaching, research, and service experience. There was no significant main effect for the quality of the institution or professional rank on selectivity in hiring and tenuring decisions. The results of this study indicate a gender bias for both men and women in preference for male job applicants.”

## Science/STEM

**Carnes, Devine, Manwell, Byars-Winston, Fine, Ford, Forscher, Isaac, Kaatz, Magua, Palta, and Sheridan 2015**

[“Effect of an Intervention to Break the Gender Bias Habit for Faculty at One Institution: A Cluster Randomized, Controlled Trial”](https://doi.org/10.1097/ACM.0000000000000552). *Academic Medicine*, Feb. 2015. Vol. 90.2 pg. 221-230. Doi: <https://doi.org/10.1097/ACM.0000000000000552>

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## Easterly and Ricard 2011

“[Conscious Efforts to End Unconscious Bias: Why Women Leave Academic Research](#)”. *Journal of research Administration*, 2011.

Women leave academic research because of unconscious bias

“Issues surrounding gender discrimination have been addressed over the past 40 years with various pieces of legislation and federal policies that have made such discrimination illegal. The number of women in higher education as students and faculty has steadily increased since the 1950s, though only in certain disciplines and in the lower faculty ranks, especially in many of the STEM disciplines (defined by the National Science Foundation as Biological Sciences; Computer and Information Science and Engineering; Engineering; Geosciences; Mathematics and Physical Sciences; Social, Behavioral and Economic Sciences; and Education and Human Resources). Why is this? This article reviews the literature regarding one possible reason for this exception: unconscious bias or gender schemas. Possible solutions are presented that can help overcome the bias experienced and perceived by female faculty in institutions of higher education in the United States.”

## Lincoln, Pincus, Koster, and Leboy 2012

“[The Matilda Effect in science: Awards and prizes in the US, 1990s and 2000s](#)”. *Social Studies of Science*, 2012. Vol. 42.2, pg. 307-320. Doi: <https://doi.org/10.1177/0306312711435830>

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### **Rossiter 1993**

["The Matthew Matilda Effect in Science"](https://doi.org/10.1177/030631293023002004). *Social Studies of Science*, 1993. Vol. 23.2, pg. 325-341. Doi: <https://doi.org/10.1177/030631293023002004>

A discussion of the "Matilda Effect" on women, building off the concept of the "Matthew Effect," which describes how people who have little to start with are more likely to be under-recognized

"Recent work has brought to light so many cases, historical and contemporary, of women scientists who have been ignored, denied credit or otherwise dropped from sight that a sex-linked phenomenon seems to exist, as has been documented to be the case in other fields, such as medicine, art history and literary criticism. Since this systematic bias in scientific information and recognition practices fits the second half of Matthew 13:12 in the Bible, which refers to the under-recognition accorded to those who have little to start with, it is suggested that sociologists of science and knowledge can add to the 'Matthew Effect', made famous by Robert K. Merton in 1968, the 'Matilda Effect', named for the American suffragist and feminist critic Matilda J. Gage of New York, who in the late nineteenth century both experienced and articulated this phenomenon. Calling attention to her and this age-old tendency may prod future scholars to include other such 'Matildas' and thus to write a better, because more comprehensive, history and sociology of science."

### **Shen 2013**

["Inequality quantified: Mind the gender gap"](https://doi.org/10.1038/495022a). *Nature*, 2013. Vol. 495, pg. 22-24. Doi: <https://doi.org/10.1038/495022a>

Gender gap in the sciences

"Female scientists have made steady gains in recent decades but they face persistent career challenges. US universities and colleges employ far more male scientists than female ones and men earn significantly more in science occupations."

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## **UB Subject**

### **IAT and Related Testing**

Carnes, Devine, Manwell, Byars-Winston, Fine, Ford, Forscher, Isaac, Kaatz, Magua, Palta, and Sheridan 2015



[“Effect of an Intervention to Break the Gender Bias Habit for Faculty at One Institution: A Cluster Randomized, Controlled Trial”](https://doi.org/10.1097/ACM.0000000000000552). *Academic Medicine*, Feb. 2015. Vol. 90.2 pg. 221-230. Doi: <https://doi.org/10.1097/ACM.0000000000000552>

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#### **Carnes, Bartels, Kaatz, and Kolehmainen 2015**

[“Why is John More Likely to Become Department Chair Than Jennifer?”](#) *Transactions of the American Clinical and Climatological Association*, ND 2015. Vol. 126, pg. 197-214.

Gender bias in medical school and its effects on experience and leadership

“This article reviews some of our research on how gender stereotypes and their accompanying assumptions and expectations can influence the careers of male and female physicians and scientists in

a myriad of subtle ways. Although stereotype-based cognitive biases may be invisible and unintentional, they nevertheless shape the experiences of women in academic medicine in ways that frequently constrain their opportunities. We present research on the following: 1) subtle differences in the evaluation of male and female medical students as revealed through text analysis of written evaluations at a critical career juncture, 2) how cultural assumptions about the way men and women should and should not behave influence medical residents' experiences as leaders, and 3) how approaching gender bias among faculty in academic medicine, science, and engineering as a remedial habit can be successful in changing individual behaviors and in improving department climate."

#### **Corrice 2009**

["Unconscious bias in faculty and leadership recruitment: A literature review"](#) *Association of American Medical Colleges Analysis in Brief*, 2009. Vol. 9.2.

"Although women and minorities have made significant strides in achieving equality in the workplace, they are still underrepresented in the upper strata of organizations, including senior faculty and leadership positions at medical schools and teaching hospitals. Within the last decade, social science researchers have pursued the theory of "unconscious bias" as one barrier to workplace equality that may persist despite a general commitment to increase diversity across the academic medicine workforce and other organizations. This Analysis in Brief reviews the scientific literature on the theory of unconscious bias, explores the role of unconscious bias in job recruitment and evaluations, and offers suggestions for search committees and others involved in hiring decisions at medical schools and teaching hospitals."

#### **Kawakami, Dovidio, Moll, Hermsen, and Russin 2000**

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**Stereotyping**

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## Steele and Aronson 1995

[“Stereotype Threat and the Intellectual Test Performance of African Americans”](#). *Journal of Personality and Social Psychology*, 1995. Vol. 69.5, pg. 797-811. Doi: <http://dx.doi.org/10.1037/0022-3514.69.5.797>

Black students will underperform when feeling the pressure of negative stereotypes.

“Stereotype threat is being at risk of confirming, as self-characteristic, a negative stereotype about one's group. Studies 1 and 2 varied the stereotype vulnerability of Black participants taking a difficult verbal test by varying whether or not their performance was ostensibly diagnostic of ability, and thus, whether or not they were at risk of fulfilling the racial stereotype about their intellectual ability. Reflecting the pressure of this vulnerability, Blacks underperformed in relation to Whites in the ability-diagnostic condition but not in the nondiagnostic condition (with Scholastic Aptitude Tests controlled). Study 3 validated that ability-diagnosticity cognitively activated the racial stereotype in these participants and motivated them not to conform to it, or to be judged by it. Study 4 showed that mere salience of the stereotype could impair Blacks' performance even when the test was not ability diagnostic. The role of stereotype vulnerability in the standardized test performance of ability-stigmatized groups is discussed.”

## Improvements Through Training

**Carnes, Devine, Manwell, Byars-Winston, Fine, Ford, Forscher, Isaac, Kaatz, Magua, Palta, and Sheridan 2015**

[“Effect of an Intervention to Break the Gender Bias Habit for Faculty at One Institution: A Cluster Randomized, Controlled Trial”](#). *Academic Medicine*, Feb. 2015. Vol. 90.2 pg. 221-230. Doi: <https://doi.org/10.1097/ACM.0000000000000552>

Intervention can help change implicit bias in university departments, specifically academic medicine, science, and engineering.

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Despite sincere commitment to egalitarian, meritocratic principles, subtle gender bias persists, constraining women's opportunities for academic advancement. The authors implemented a pair-

matched, single-blind, cluster-randomized, controlled study of a gender bias habit-changing intervention at a large public university.

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## **Dasgupta and Asgari 2004**

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Exposure to female leaders counteracts gender stereotyping

“Two studies tested the conditions under which social environments can undermine automatic gender stereotypic beliefs expressed by women. Study 1, a laboratory experiment, manipulated exposure to biographical information about famous female leaders. Study 2, a year-long field study, took advantage of pre-existing differences in the proportion of women occupying leadership positions (e.g., female professors) in two naturally occurring environments—a women’s college and a coeducational college. Together, these studies investigated: (a) whether exposure to women in leadership positions can temporarily undermine women’s automatic gender stereotypic beliefs, and (b) whether this effect is mediated by the frequency with which female leaders are encountered. Results revealed first that when women were in social contexts that exposed them to female leaders, they were less likely to express automatic stereotypic beliefs about their ingroup (Studies 1 and 2). Second, Study 2 showed that the long-term effect of social environments (women’s college vs. coed college) on automatic gender stereotyping was mediated by the frequency of exposure to women leaders (i.e., female faculty). Third, some academic environments (e.g., classes in male-dominated disciplines like science and math) produced an increase in automatic stereotypic beliefs among students at the coed college but not at the women’s college—importantly, this effect was mediated by the sex of the course instructors. Together, these findings underscore the power of local environments in shaping women’s nonconscious beliefs about their ingroup.”

## **Isaac, Lee, and Carnes 2009**

[“Interventions that affect gender bias in hiring: A systematic review”](#). *Academic Medicine*, 2009. Vol. 84 pg. 1440–1446. Doi: <https://doi.org/10.1097/ACM.0b013e3181b6ba00>

Literature review shows negative bias against women for academic medical jobs, but there are ways to mitigate this.

“To systematically review experimental evidence for interventions mitigating gender bias in employment. Unconscious endorsement of gender stereotypes can undermine academic medicine's commitment to gender equity. The authors performed electronic and hand searches for randomized controlled studies since 1973 of interventions that affect gender differences in evaluation of job applicants. Twenty-seven studies met all inclusion criteria. Interventions fell into three categories: application information, applicant features, and rating conditions. The studies identified gender bias as the difference in ratings or perceptions of men and women with identical qualifications. Studies reaffirmed negative bias against women being evaluated for positions traditionally or predominantly held by men (male sex-typed jobs). The assessments of male and female raters rarely differed. Interventions that provided raters with clear evidence of job-relevant competencies were effective. However, clearly competent women were rated lower than equivalent men for male sex-typed jobs unless evidence of communal qualities was also provided. A commitment to the value of credentials

before review of applicants and women's presence at above 25% of the applicant pool eliminated bias against women. Two studies found unconscious resistance to "antibias" training, which could be overcome with distraction or an intervening task. Explicit employment equity policies and an attractive appearance benefited men more than women, whereas repeated employment gaps were more detrimental to men. Masculine-scented perfume favored the hiring of both sexes. Negative bias occurred against women who expressed anger or who were perceived as self-promoting. High-level evidence exists for strategies to mitigate gender bias in hiring."

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#### **Improvements Through Other Means**

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#### **Marsh, Jayasinghe, and Bond 2008**

["Improving the Peer-Review Process for Grant Applications: Reliability, Validity, Bias, and Generalizability"](#). *American Psychologist*, 2008. Vol. 63.3, pg. 160-168. Doi: <http://dx.doi.org/10.1037/0003-066X.63.3.160>

Peer-review is a flawed process, and the "reader system" is more reliable.

"Peer review is a gatekeeper, the final arbiter of what is valued in academia, but it has been criticized in relation to traditional psychological research criteria of reliability, validity, generalizability, and potential biases. Despite a considerable literature, there is surprisingly little sound peer-review research examining these criteria or strategies for improving the process. This article summarizes the authors' research program with the Australian Research Council, which receives thousands of grant proposals from the social science, humanities, and science disciplines and reviews by assessors from all over the world. Using multilevel cross-classified models, the authors critically evaluated peer reviews of grant applications and potential biases associated with applicants, assessors, and their interaction (e.g., age, gender, university, academic rank, research team composition, nationality, experience). Peer reviews lacked reliability, but the only major systematic bias found involved the inflated, unreliable, and invalid ratings of assessors nominated by the applicants themselves. The authors propose a new approach, the reader system, which they evaluated with psychology and education grant proposals and found to be substantially more reliable and strategically advantageous than traditional peer reviews of grant applications."

#### **Rudman, Ashmore, and Gary 2001**

["'Unlearning' automatic biases: The malleability of implicit prejudice and stereotypes"](#). *Journal of Personality and Social Psychology*, 2001. Vol. 81.5 pg. 856–868. Doi: <http://dx.doi.org/10.1037/0022-3514.81.5.856>

Diversity education is successful in reducing biases and implicit prejudice.

“The present research suggests that automatic and controlled intergroup biases can be modified through diversity education. In 2 experiments, students enrolled in a prejudice and conflict seminar showed significantly reduced implicit and explicit anti-Black biases, compared with control students. The authors explored correlates of prejudice and stereotype reduction. In each experiment, seminar students' implicit and explicit change scores positively covaried with factors suggestive of affective and cognitive processes, respectively. The findings show the malleability of implicit prejudice and stereotypes and suggest that these may effectively be changed through affective processes.”

## **Valian 2005**

[“Beyond Gender Schemas: Improving the Advancement of Women in Academia”](https://doi.org/10.1111/j.1527-2001.2005.tb00495.x). *Hypatia: A Journal of Feminist Philosophy*, 2005. Vol. 20.3, pg. 198-213. Doi: <https://doi.org/10.1111/j.1527-2001.2005.tb00495.x>

How to advance women in academia

The author describes the discrepancy in experiences based on gender, examining the experimental data of various studies. She describes the cumulative impact of these experiences, as well as their impact on self-perception. Finally, she discusses why gender equity is important and how one can increase it.

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# **Identity**

## **Gender**

### **Bornmann, Mutz, and Daniel 2007**

[“Gender differences in grant peer review: A meta-analysis”](https://doi.org/10.1016/j.joi.2007.03.001). *Journal of Informetrics*, 2007. Pg. 226-238. Doi: <https://doi.org/10.1016/j.joi.2007.03.001>

Meta-analysis revealing gender bias in grant allocations

“Narrative reviews of peer review research have concluded that there is negligible evidence of gender bias in the awarding of grants based on peer review. Here, we report the findings of a meta-analysis of 21 studies providing, to the contrary, evidence of robust gender differences in grant award procedures. Even though the estimates of the gender effect vary substantially from study to study, the model estimation shows that all in all, among grant applicants men have statistically significant greater odds of receiving grants than women by about 7%.”

### **Bornmann, Mutz, and Daniel 2009**

["The influence of the applicant's gender on the modeling of a peer review process by using latent Markov models"](http://doi.org/10.1007/s11192-008-2189-2). *Scientometrics*, 2009, Vol. 81.2, pg. 407-411. Doi: <http://doi.org/10.1007/s11192-008-2189-2>

The effect of gender on the peer review process

"In the grant peer review process we can distinguish various evaluation stages in which assessors judge applications on a rating scale. Bornmann & al. [2008] show that latent Markov models offer a fundamentally good opportunity to model statistically peer review processes. The main objective of this short communication is to test the influence of the applicants' gender on the modeling of a peer review process by using latent Markov models. We found differences in transition probabilities from one stage to the other for applications for a doctoral fellowship submitted by male and female applicants."

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### **Corrice 2009**

[“Unconscious bias in faculty and leadership recruitment: A literature review”](#) *Association of American Medical Colleges Analysis in Brief*, 2009. Vol. 9.2.

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[“Seeing is believing: Exposure to counterstereotypic women leaders and its effect on the malleability of automatic gender stereotyping”](#). *Journal of Experimental Social Psychology*, 2004. Vol 40, pg. 642-658. Doi: <http://dx.doi.org/10.1016/j.jesp.2004.02.003>

Exposure to female leaders counteracts gender stereotyping

“Two studies tested the conditions under which social environments can undermine automatic gender stereotypic beliefs expressed by women. Study 1, a laboratory experiment, manipulated exposure to biographical information about famous female leaders. Study 2, a year-long field study, took advantage of pre-existing differences in the proportion of women occupying leadership positions (e.g., female professors) in two naturally occurring environments—a women’s college and a coeducational college. Together, these studies investigated: (a) whether exposure to women in leadership positions can temporarily undermine women’s automatic gender stereotypic beliefs, and (b) whether this effect is mediated by the frequency with which female leaders are encountered. Results revealed first that when women were in social contexts that exposed them to female leaders, they were less likely to express automatic stereotypic beliefs about their ingroup (Studies 1 and 2). Second, Study 2 showed that the long-term effect of social environments (women’s college vs. coed college) on automatic gender stereotyping was mediated by the frequency of exposure to women leaders (i.e., female faculty). Third, some academic environments (e.g., classes in male-dominated disciplines like science and math) produced an increase in automatic stereotypic beliefs among students at the coed college but not at the women’s college—importantly, this effect was mediated by the sex of the course instructors. Together, these findings underscore the power of local environments in shaping women’s nonconscious beliefs about their ingroup.”

#### **Davenport and Snyder 1995**

[“Who Cites Women? Whom Do Women Cite?: An Exploration of Gender and Scholarly Citation in Sociology”](#). *Journal of Documentation*, 1995. Vol. 51.4, pg. 404-410. <http://dx.doi.org/10.1108/eb026958>

Gender bias in sociological citation

“The authors offer a brief analysis of citation practice in twenty-five American sociological journals, in an attempt to explore claims that citation may show gender bias. Their work follows previous surveys of gender and citation and publication in the social sciences which suggest that women perform less well than men in both areas. The findings of this study suggest that there is indeed gender bias in citation in sociology, and the authors offer some hypotheses to explain the phenomenon that might be tested in further research.”

### **Easterly and Ricard 2011**

["Conscious Efforts to End Unconscious Bias: Why Women Leave Academic Research"](#). *Journal of research Administration*, 2011.

Women leave academic research because of unconscious bias

"Issues surrounding gender discrimination have been addressed over the past 40 years with various pieces of legislation and federal policies that have made such discrimination illegal. The number of women in higher education as students and faculty has steadily increased since the 1950s, though only in certain disciplines and in the lower faculty ranks, especially in many of the STEM disciplines (defined by the National Science Foundation as Biological Sciences; Computer and Information Science and Engineering; Engineering; Geosciences; Mathematics and Physical Sciences; Social, Behavioral and Economic Sciences; and Education and Human Resources). Why is this? This article reviews the literature regarding one possible reason for this exception: unconscious bias or gender schemas. Possible solutions are presented that can help overcome the bias experienced and perceived by female faculty in institutions of higher education in the United States."

### **England 2010**

["The Gender Revolution: Uneven and Stalled"](#). *Sociologists for Women in Society Feminist Lecture in Gender and Society*, 2010. Vol. 24.2, pg. 149-166. Doi: <https://doi.org/10.1177/0891243210361475>

Why some women have taken "male" jobs, but males have not taken "female" jobs

"In this article, the author describes sweeping changes in the gender system and offers explanations for why change has been uneven. Because the devaluation of activities done by women has changed little, women have had strong incentive to enter male jobs, but men have had little incentive to take on female activities or jobs. The gender egalitarianism that gained traction was the notion that women should have access to upward mobility and to all areas of schooling and jobs. But persistent gender essentialism means that most people follow gender-typical paths except when upward mobility is impossible otherwise. Middle-class women entered managerial and professional jobs more than working-class women integrated blue-collar jobs because the latter were able to move up while choosing a "female" occupation; many mothers of middle-class women were already in the highest-status female occupations. The author also notes a number of gender-egalitarian trends that have stalled."

### **Ewing, Stukas Jr., and Sheehan 2003**

["Student Prejudice Against Gay Male and Lesbian Lecturers"](#). *The Journal of Social Psychology*, 2003. Vol. 143.5, pg. 569-579. Doi: <http://dx.doi.org/10.1080/00224540309598464>

Perceptions of lecturers based on sexual orientation



“The authors examined whether gay men and lesbians are evaluated more negatively than individuals of unspecified sexual orientation when attributional ambiguity surrounds evaluations and whether they are evaluated similarly to unspecified others when no attributional ambiguity is present. One male and one female lecturer delivered either a strong or a weak lecture to students who either (a) believed that the lecturer was a gay man or a lesbian or (b) did not receive sexual orientation information. Contrary to predictions, the quality of the lecture did not influence the ratings of known gay male and lesbian lecturers, although lecture quality strongly influenced ratings of lecturers whose sexual orientation was unspecified. After strong lectures, participants rated known gay male and lesbian lecturers more negatively than they did lecturers whose sexual orientation was unspecified. After weak lectures, participants rated known gay male and lesbian lecturers more positively than they did the others. The authors discussed the possibility that students might moderate their ratings to avoid discriminating against gay and lesbian lecturers.”

#### **Gasser and Shaffer 2014**

“[Career Development of Women in Academia: Traversing the Leaky Pipeline](#)”. *The Professional Counselor*, 2014. Vol. 4.4, pg. 332-352.

Model for women’s experiences in academia, specifically to help with counseling

“Women’s experiences in academia are laden with a fundamental set of issues pertaining to gender inequalities. A model reflecting women’s career development and experiences around their academic pipeline (or career in academia) is presented. This model further conveys a new perspective on the experiences of women academicians before, during and after their faculty appointments and can help in career counseling. Specifically, this model provides career counselors with a framework to conceptualize the concerns of women clients who work in academic environments. Other implications for career counseling as well as limitations and future directions also are discussed.”

#### **Grunspan, Eddy, Brownell, Wiggins, Crowe, and Goodreau 2016**

“[Males Under-Estimate Academic Performance of Their Female Peers in Undergraduate Biology Classrooms](#)”. *PLoS One*, 2016. Vol. 11.2. Doi: <https://dx.doi.org/10.1371/journal.pone.0148405>

Male underestimation of female peers in biology

“Women who start college in one of the natural or physical sciences leave in greater proportions than their male peers. The reasons for this difference are complex, and one possible contributing factor is the social environment women experience in the classroom. Using social network analysis, we explore how gender influences the confidence that college-level biology students have in each other’s mastery of biology. Results reveal that males are more likely than females to be named by peers as being knowledgeable about the course content. This effect increases as the term progresses, and persists even after controlling for class performance and outspokenness. The bias in nominations is specifically due to males over-nominating their male peers relative to their performance. The over-nomination of male peers is commensurate with an overestimation of male grades by 0.57 points on a 4 point grade scale, indicating a strong male bias among males when assessing their classmates. Females, in contrast,

nominated equitably based on student performance rather than gender, suggesting they lacked gender biases in filling out these surveys. These trends persist across eleven surveys taken in three different iterations of the same Biology course. In every class, the most renowned students are always male. This favoring of males by peers could influence student self-confidence, and thus persistence in this STEM discipline.”

### **Haswell and Haswell 1996**

“[Gender Bias and Critique of Student Writing](https://doi.org/10.1016/S1075-2935(96)90004-5)”. *Assessing Writing*, 1996. Vol. 3.1, pg. 31-83. Doi: [https://doi.org/10.1016/S1075-2935\(96\)90004-5](https://doi.org/10.1016/S1075-2935(96)90004-5)

The effect of gender on the critique of student writing

“The main purpose of this empirical investigation into gender and writing instruction is to locate ways that the critique of readers may be affected by their foreknowledge of the student writer's sex. Thirty-two teachers and 32 students evaluated and diagnosed no student essays, neither overtly marked as to the sex of the writer. Independent variables controlled for were sex of reader, sex of the interviewer who prompted response during the taped session, professional status of participant (student or teacher), and knowledge of author's biological sex by participant (prior knowledge or no prior knowledge). Statistical analysis found gender interacting with all these variables. Among other associations, readers spontaneously constructed the author's sex even when they had not been informed of it; they rated the essays lower when they knew the writer was of their own sex, as measured by holistic rating and percentage of positive critique; they showed an anti-male bias as measured by holistic rating, and an anti-feminine bias as measured by attribution of agency to the writing; and they tended to suppress gender, as measured by the amount of agency that they passivized or made neutral. In sum, the study found evidence for the active presence of gender effects, especially via polarized gender stereotypes, as students and teachers appraise student writing.”

### **Isaac, Lee, and Carnes 2009**

“[Interventions that affect gender bias in hiring: A systematic review](https://doi.org/10.1097/ACM.0b013e3181b6ba00)”. *Academic Medicine*, 2009. Vol. 84 pg. 1440–1446. Doi: <https://doi.org/10.1097/ACM.0b013e3181b6ba00>

Literature review shows negative bias against women for academic medical jobs, but there are ways to mitigate this.

“To systematically review experimental evidence for interventions mitigating gender bias in employment. Unconscious endorsement of gender stereotypes can undermine academic medicine's commitment to gender equity. The authors performed electronic and hand searches for randomized controlled studies since 1973 of interventions that affect gender differences in evaluation of job applicants. Twenty-seven studies met all inclusion criteria. Interventions fell into three categories: application information, applicant features, and rating conditions. The studies identified gender bias as the difference in ratings or perceptions of men and women with identical qualifications. Studies reaffirmed negative bias against women being evaluated for positions traditionally or predominantly held by men (male sex-typed jobs). The assessments of male and female raters rarely differed. Interventions that provided raters with clear evidence of job-relevant competencies were effective.

However, clearly competent women were rated lower than equivalent men for male sex-typed jobs unless evidence of communal qualities was also provided. A commitment to the value of credentials before review of applicants and women's presence at above 25% of the applicant pool eliminated bias against women. Two studies found unconscious resistance to "antibias" training, which could be overcome with distraction or an intervening task. Explicit employment equity policies and an attractive appearance benefited men more than women, whereas repeated employment gaps were more detrimental to men. Masculine-scented perfume favored the hiring of both sexes. Negative bias occurred against women who expressed anger or who were perceived as self-promoting. High-level evidence exists for strategies to mitigate gender bias in hiring."

### **Jagsi, Guancial, Worobey, Henault, Chang, Starr, Tarbell, and Hylek 2006**

["The 'Gender Gap' in Authorship of Academic Medical Literature - A 35-Year Perspective"](#). *The New England Journal of Medicine*, 2006. Vol. 355, pg. 281-287. Doi: <https://doi.org/10.1056/NEJMsa053910>

Increase in female authors in medical journals, but women are still a minority

#### **"Background**

Participation of women in the medical profession has increased during the past four decades, but issues of concern persist regarding disparities between the sexes in academic medicine. Advancement is largely driven by peer-reviewed original research, so we sought to determine the representation of female physician-investigators among the authors of selected publications during the past 35 years.

#### **Methods**

Original articles from six prominent medical journals — the *New England Journal of Medicine (NEJM)*, the *Journal of the American Medical Association (JAMA)*, the *Annals of Internal Medicine (Ann Intern Med)*, the *Annals of Surgery (Ann Surg)*, *Obstetrics & Gynecology (Obstet Gynecol)*, and the *Journal of Pediatrics (J Pediatr)* — were categorized according to the sex of both the first and the senior (last listed) author. Sex was also determined for the authors of guest editorials in *NEJM* and *JAMA*. Data were collected for the years 1970, 1980, 1990, 2000, and 2004. The analysis was restricted to authors from U.S. institutions holding M.D. degrees.

#### **Results**

The sex was determined for 98.5 percent of the 7249 U.S. authors of original research with M.D. degrees. The proportion of first authors who were women increased from 5.9 percent in 1970 to 29.3 percent in 2004 ( $P<0.001$ ), and the proportion of senior authors who were women increased from 3.7 percent to 19.3 percent ( $P<0.001$ ) during the same period. The proportion of authors who were women increased most sharply in *Obstet Gynecol* (from 6.7 percent of first authors and 6.8 percent of senior authors in 1970 to 40.7 percent of first authors and 28.0 percent of senior authors in 2004) and *J Pediatr* (from 15.0 percent of first authors and 4.3 percent of senior authors in 1970 to 38.9 percent of first authors and 38.0 percent of senior authors in 2004) and remained low in *Ann Surg* (from 2.3 percent of first authors and 0.7 percent of senior authors in 1970 to 16.7 percent of first authors and 6.7 percent of senior authors in 2004). In 2004, 11.4 percent of the authors of guest editorials in *NEJM* and 18.8 percent of the authors of guest editorials in *JAMA* were women.

## Conclusions

Over the past four decades, the proportion of women among both first and senior physician-authors of original research in the United States has significantly increased. Nevertheless, women still compose a minority of the authors of original research and guest editorials in the journals studied."

### Jones, Fanson, Lanfear, Symonds, and Higgie 2014

["Gender differences in conference presentations: a consequence of self-selection?"](https://doi.org/10.7717/peerj.627) *PeerJ*, 2014. Doi: <https://doi.org/10.7717/peerj.627>

Conference presentations demonstrate the impacts of gender bias and visibility in evolutionary biology.

"Women continue to be under-represented in the sciences, with their representation declining at each progressive academic level. These differences persist despite long-running policies to ameliorate gender inequity. We compared gender differences in exposure and visibility at an evolutionary biology conference for attendees at two different academic levels: student and post-PhD academic. Despite there being almost exactly a 1:1 ratio of women and men attending the conference, we found that when considering only those who presented talks, women spoke for far less time than men of an equivalent academic level: on average student women presented for 23% less time than student men, and academic women presented for 17% less time than academic men. We conducted more detailed analyses to tease apart whether this gender difference was caused by decisions made by the attendees or through bias in evaluation of the abstracts. At both academic levels, women and men were equally likely to request a presentation. However, women were more likely than men to prefer a short talk, regardless of academic level. We discuss potential underlying reasons for this gender bias, and provide recommendations to avoid similar gender biases at future conferences."

### Knobloch-Westerwick and Glynn 2013

["The Matilda Effect – Role Congruity Effects on Scholarly Communication: A Citation Analysis of Communication Research and Journal of Communication Articles"](https://doi.org/10.1177/0093650211418339). *Communication Research*, 2013. Vol. 40.1, pg. 3-26. Doi: <https://doi.org/10.1177/0093650211418339>

Male communication scientists receive more citations than female scientists.

"Using role congruity theory as the basis for the study, an analysis of 1,020 articles published 1991-2005 in *Communication Research* and *Journal of Communication*, as well as the ISI citations these articles received and the citations these articles included, was conducted. In line with a hypothesized "Matilda effect" (underrecognition of female scientists), articles authored by female communication scientists received fewer citations than articles authored by males. Hypotheses on moderating impacts of research topic, author productivity, and citing author's sex, as well as on change in the effect's extent across time were derived from the theoretical framework. Networking conceptualizations led to an additional hypothesis. Five of six hypotheses were supported."

**Knobloch-Westerwick, Glynn, and Huge 2013**

["The Matilda Effect in Science Communication: An Experiment on Gender Bias in Publication Quality Perceptions and Collaboration Interest"](#). *Science Communication*, 2013. Vol 35, pg. 603-625. Doi: <https://doi.org/10.1177/1075547012472684>

Gender affects perception of the author of scientific conference abstracts

"An experiment with 243 young communication scholars tested hypotheses derived from role congruity theory regarding impacts of author gender and gender typing of research topics on perceived quality of scientific publications and collaboration interest. Participants rated conference abstracts ostensibly authored by females or males, with author associations rotated. The abstracts fell into research areas perceived as gender-typed or gender-neutral to ascertain impacts from gender typing of topics. Publications from male authors were associated with greater scientific quality, in particular if the topic was male-typed. Collaboration interest was highest for male authors working on male-typed topics. Respondent sex did not influence these patterns."

**Kretschmer, Kundra, deB. Beaver, and Kretschmer 2012**

["Gender bias in journals of gender studies"](#). *Scientometrics*, 2012. Vol 93.1, pg.135–150. Doi: <https://doi.org/10.1007/s11192-012-0661-5>

Gender bias changes by discipline: there is less bias against female authors in gender studies publications.

"The causes of gender bias favoring men in scientific and scholarly systems are complex and related to overall gender relationships in most of the countries of the world. An as yet unanswered question is whether in research publication gender bias is equally distributed over scientific disciplines and fields or if that bias reflects a closer relation to the subject matter. We expected less gender bias with respect to subject matter, and so analysed 14 journals of gender studies using several methods and indicators. The results confirm our expectation: the very high position of women in co-operation is striking; female scientists are relatively overrepresented as first authors in articles. Collaboration behaviour in gender studies differs from that of authors in PNAS. The pattern of gender studies reflects associations between authors of different productivity, or "masters" and "apprentices" but the PNAS pattern reflects associations between authors of roughly the same productivity, or "peers". It would be interesting to extend the analysis of these three-dimensional collaboration patterns further, to see whether a similar characterization holds, what it might imply about the patterns of authorship in different areas, what those patterns might imply about the role of collaboration, and whether there are differences between females and males in collaboration patterns."

**Ledin, Bornmann, Gannon, and Wallon 2007**

["A persistent problem: Traditional gender roles hold back female scientists"](#). *European Molecular Biology Organization Reports*, 2007. Vol 8.11, pg. 982 -987. Doi: <https://doi.org/10.1038/sj.embor.7401109>

## Gender's influence on various parts of a scientist's career

The researchers examined the success rate of female applicants who apply for the European Molecular Biology Organization's (EMBO) Long-Term Fellowships (LTFs) and the Young Investigator Programme (YIP), which is typically lower than the rate for male applicants. They investigated different factors which could result in this bias, including names on applications, language of CVs, and bibliometric data. They found that women typically have a lower publication rate. Finally, they investigate the possible causes for lower productivity, which can include social factors such as family. They conclude that a number of factors combine to affect women's success rate.

### **Lincoln, Pincus, Koster, and Leboy 2012**

["The Matilda Effect in science: Awards and prizes in the US, 1990s and 2000s"](#). *Social Studies of Science*, 2012. Vol. 42.2, pg. 307-320. Doi: <https://doi.org/10.1177/0306312711435830>

Women continue to receive less recognition than men in the sciences; one example of this is in awards allocated.

"Science is stratified, with an unequal distribution of research facilities and rewards among scientists. Awards and prizes, which are critical for shaping scientific career trajectories, play a role in this stratification when they differentially enhance the status of scientists who already have large reputations: the 'Matthew Effect'. Contrary to the Mertonian norm of universalism – the expectation that the personal attributes of scientists do not affect evaluations of their scientific claims and contributions – in practice, a great deal of evidence suggests that the scientific efforts and achievements of women do not receive the same recognition as do those of men: the 'Matilda Effect'. Awards in science, technology, engineering and medical (STEM) fields are not immune to these biases. We outline the research on gender bias in evaluations of research and analyze data from 13 STEM disciplinary societies. While women's receipt of professional awards and prizes has increased in the past two decades, men continue to win a higher proportion of awards for scholarly research than expected based on their representation in the nomination pool. The results support the powerful twin influences of implicit bias and committee chairs as contributing factors. The analysis sheds light on the relationship of external social factors to women's science careers and helps to explain why women are severely underrepresented as winners of science awards. The ghettoization of women's accomplishments into a category of 'women-only' awards also is discussed."

### **Lutz 1990**

["the erasure of women's writing in sociocultural anthropology"](#) *Journal of the American Ethnological Society*, 1990. Vol. 17.4, pg. 611-627. Doi: <https://doi.org/10.1525/ae.1990.17.4.02a00010>

Female authors are cited less frequently in sociology than male authors.

"Writing, citation, and other canon-setting patterns in the recent (1977–86) literature of sociocultural anthropology reveal the impact of gender relations. In this article, citation is treated as a social practice which, among other things, legitimizes the voice of the cited author. While women produce a substantial proportion of the work available for citation, the proportion of women authors cited is lower than would be expected on that basis, and it varies with the citing author's gender. Annual meetings programs also

show a tendency for women to be extremely active, but the frequent focus on gender and feminism is not reflected in overviews of the field. Conclusions are drawn about the relative marginalization of women's work and about the relationship between the warranting of women's academic work and the public or private context of its evaluation."

#### **Marsh, Jayasinghe, and Bond 2008**

["Improving the Peer-Review Process for Grant Applications: Reliability, Validity, Bias, and Generalizability"](#). *American Psychologist*, 2008. Vol. 63.3, pg. 160-168. Doi: <http://dx.doi.org/10.1037/0003-066X.63.3.160>

Peer-review is a flawed process, and the "reader system" is more reliable.

"Peer review is a gatekeeper, the final arbiter of what is valued in academia, but it has been criticized in relation to traditional psychological research criteria of reliability, validity, generalizability, and potential biases. Despite a considerable literature, there is surprisingly little sound peer-review research examining these criteria or strategies for improving the process. This article summarizes the authors' research program with the Australian Research Council, which receives thousands of grant proposals from the social science, humanities, and science disciplines and reviews by assessors from all over the world. Using multilevel cross-classified models, the authors critically evaluated peer reviews of grant applications and potential biases associated with applicants, assessors, and their interaction (e.g., age, gender, university, academic rank, research team composition, nationality, experience). Peer reviews lacked reliability, but the only major systematic bias found involved the inflated, unreliable, and invalid ratings of assessors nominated by the applicants themselves. The authors propose a new approach, the reader system, which they evaluated with psychology and education grant proposals and found to be substantially more reliable and strategically advantageous than traditional peer reviews of grant applications."

#### **McElhinny, Hols, Holtzkeener, and Unger 2003**

["Gender, publication and citation in sociolinguistics and linguistic anthropology: The construction of a scholarly canon"](#) *Language in Society*, 2003. Vol. 32.3, pg. 299-328. Doi: <http://dx.doi.org/10.1017/S0047404503323012>

Lower rate of publication for female authors in sociolinguistics and linguistic anthropology

"Feminist scholars have begun to ask how existing conceptual schemes and organizational structures in academic disciplines have excluded women and feminist ideas, and to provide suggestions for transformation. One strand of this work has been the exploration of how canons of thought are constructed in such fields as economics, sociology, and sociocultural anthropology. This article begins such an investigation for sociolinguistics and linguistic anthropology by reviewing how gender correlates with publication and citation over a 35-year period (1965–2000) in five key journals, and in 16 textbooks published in the 1990s. It describes some marked differences in the publication of works by women and on gender in the five journals, as well as some significant differences in the degree to which men and women cite the work of women. It also considers how the rate of publication of articles on sex, gender,



and women is correlated with publication of female authors. It concludes with a discussion of the implications of this study for changing institutional practices in our field.”

### **Milkman, Akinola, and Chugh 2012**

“[Temporal Distance and Discrimination: An Audit Study in Academia](#)”. *Psychological Science*, 2012. Pg. 1-8. Doi: <https://doi.org/10.1177/0956797611434539>

Discrimination against women and minorities by professors when planning meetings

“Through a field experiment set in academia (with a sample of 6,548 professors), we found that decisions about distant-future events were more likely to generate discrimination against women and minorities (relative to Caucasian males) than were decisions about near-future events. In our study, faculty members received e-mails from fictional prospective doctoral students seeking to schedule a meeting either that day or in 1 week; students’ names signaled their race (Caucasian, African American, Hispanic, Indian, or Chinese) and gender. When the requests were to meet in 1 week, Caucasian males were granted access to faculty members 26% more often than were women and minorities; also, compared with women and minorities, Caucasian males received more and faster responses. However, these patterns were essentially eliminated when prospective students requested a meeting that same day. Our identification of a temporal discrimination effect is consistent with the predictions of construal-level theory and implies that subtle contextual shifts can alter patterns of race- and gender-based discrimination.”

### **Milkman, Akinola, and Chugh 2014**

“[What Happens Before? A Field Experiment Exploring How Pay and Representation Differentially Shape Bias on the Pathway into Organizations](#)”. *Journal of Applied Psychology*, 2014. Doi: <http://dx.doi.org/10.2139/ssrn.2063742>

Faculty responses to students discussing research opportunities were biased in favor of white males above all other categories

“Little is known about how discrimination manifests before individuals formally apply to organizations or how it varies within and between organizations. We address this knowledge gap through an audit study in academia of over 6,500 professors at top U.S. universities drawn from 89 disciplines and 259 institutions. In our experiment, professors were contacted by fictional prospective students seeking to discuss research opportunities prior to applying to a doctoral program. Names of students were randomly assigned to signal gender and race (Caucasian, Black, Hispanic, Indian, Chinese), but messages were otherwise identical. We hypothesized that discrimination would appear at the informal “pathway” preceding entry to academia and would vary by discipline and university as a function of faculty representation and pay. We found that when considering requests from prospective students seeking mentoring in the future, faculty were significantly more responsive to Caucasian males than to all other categories of students, collectively, particularly in higher-paying disciplines and private institutions. Counterintuitively, the representation of women and minorities and discrimination were uncorrelated, a finding that suggests greater representation cannot be assumed to reduce discrimination. This research



highlights the importance of studying decisions made before formal entry points into organizations and reveals that discrimination is not evenly distributed within and between organizations.”

#### **Monzo and SooHoo 2014**

“[Translating the Academy: Learning the Racialized Languages of Academia](#)”. *Journal of Diversity in Higher Education*, 2014. Vol. 7.3, pg. 147-165. Doi: <http://dx.doi.org/10.1037/a0037400>

Experiences of two women of color in academia

“This article presents narratives of 2 women faculty of color, 1 early career Latina and the other tenured Asian American woman, regarding their ontological and epistemological struggles in academia, as well as the hope, impetus, and strategies for change that they constructed together. Drawing on a critical pedagogy perspective, mentoring is discussed as a praxis of allyship that develops organically within relationships that recognize each person’s strengths, provides instrumental knowledge about the academy, provides intellectual stimulation and reciprocal reflection, and is a collaborative endeavor that helps them to resist erasure and insert visibly diverse knowledge systems into people’s academic pursuits and responsibilities.”

#### **Moss-Racusin, Dovidio, Brescoll, Graham, and Handelsman 2012**

“[Science faculty’s subtle gender biases favor male students](#)”. *PNAS*, 2012. Vol 109.41. doi: <https://doi.org/10.1073/pnas.1211286109>

Bias against lab manager applications with female names, rather than male names

“Despite efforts to recruit and retain more women, a stark gender disparity persists within academic science. Abundant research has demonstrated gender bias in many demographic groups, but has yet to experimentally investigate whether science faculty exhibit a bias against female students that could contribute to the gender disparity in academic science. In a randomized double-blind study (n = 127), science faculty from research-intensive universities rated the application materials of a student—who was randomly assigned either a male or female name—for a laboratory manager position. Faculty participants rated the male applicant as significantly more competent and hireable than the (identical) female applicant. These participants also selected a higher starting salary and offered more career mentoring to the male applicant. The gender of the faculty participants did not affect responses, such that female and male faculty were equally likely to exhibit bias against the female student. Mediation analyses indicated that the female student was less likely to be hired because she was viewed as less competent. We also assessed faculty participants’ preexisting subtle bias against women using a standard instrument and found that preexisting subtle bias against women played a moderating role, such that subtle bias against women was associated with less support for the female student, but was unrelated to reactions to the male student. These results suggest that interventions addressing faculty gender bias might advance the goal of increasing the participation of women in science.”

#### **RAND 2005**

[“Is There Gender Bias in Federal Grant Programs?”](#). *RAND Infrastructure, Safety, and Environment Research Brief*, 2005. RB-9147-NSF

Federal Grant agencies tend not to have gender differences in allocation except at NIH and with subsequent application rates.

“Based on analysis of three federal agency databases and two researcher surveys, we did not find gender differences in federal grant funding outcomes, with two exceptions. First, we found a gender gap in the amount of funding on average that females receive relative to their male counterparts at NIH, although important caveats are associated with that finding. Second, we found a gender gap in subsequent application rates. Suggestions for future data gathering and analysis are discussed.”

### **Rossiter 1993**

[“The Matthew Matilda Effect in Science”](#). *Social Studies of Science*, 1993. Vol. 23.2, pg. 325-341. Doi: <https://doi.org/10.1177/030631293023002004>

A discussion of the “Matilda Effect” on women, building off the concept of the “Matthew Effect,” which describes how people who have little to start with are more likely to be under-recognized

“Recent work has brought to light so many cases, historical and contemporary, of women scientists who have been ignored, denied credit or otherwise dropped from sight that a sex-linked phenomenon seems to exist, as has been documented to be the case in other fields, such as medicine, art history and literary criticism. Since this systematic bias in scientific information and recognition practices fits the second half of Matthew 13:12 in the Bible, which refers to the under-recognition accorded to those who have little to start with, it is suggested that sociologists of science and knowledge can add to the 'Matthew Effect', made famous by Robert K. Merton in 1968, the 'Matilda Effect', named for the American suffragist and feminist critic Matilda J. Gage of New York, who in the late nineteenth century both experienced and articulated this phenomenon. Calling attention to her and this age-old tendency may prod future scholars to include other such 'Matildas' and thus to write a better, because more comprehensive, history and sociology of science.”

### **Shen 2013**

[“Inequality quantified: Mind the gender gap”](#). *Nature*, 2013. Vol. 495, pg. 22-24. Doi: <https://doi.org/10.1038/495022a>

Gender gap in the sciences

“Female scientists have made steady gains in recent decades but they face persistent career challenges. US universities and colleges employ far more male scientists than female ones and men earn significantly more in science occupations.”

### **Shields, Zawadzki, and Johnson 2011**

[“The Impact of the Workshop Activity for Gender Equity Simulation in the Academy \(WAGES–Academic\) in Demonstrating Cumulative Effects of Gender Bias”](#). *Journal of Diversity in Higher Education*, 2011. Vol. 4.2, pg. 120-129. Doi: <https://doi.org/10.1037/a0022953>

WAGES-Academic training worked to help undergrads unlearn unconscious bias behaviors.

“We report experimental evaluation of the Workshop Activity for Gender Equity Simulation in the Academy (WAGES–Academic), a brief, experiential simulation of the cumulative effects of unconscious bias in the academic workplace. We predicted that participants who played WAGES–Academic would demonstrate significantly increased knowledge and retention of gender equity issues in the academic workplace compared with participants in a control condition. Baseline information on general knowledge of workplace gender equity issues was obtained from 1,254 undergraduates. In the second phase, 144 were randomly assigned to complete either WAGES–Academic or a control task, and the immediate effects of the activities were measured. Participants were contacted 7–11 days later to complete an online measure of knowledge retention. Compared with a control condition, WAGES–Academic increased knowledge and retention. This effect occurred irrespective of prior level of sexist beliefs, participant gender, or whether the participant had been on the advantaged or disadvantaged team. Potential use and testing of WAGES–Academic with university faculty and administrators are discussed.”

## **Stack 2002**

[“Gender and Scholarly Productivity: The case of criminal justice”](#). *Journal of Criminal Justice*, 2002. Vol. 30, pg. 175-182. Doi: [http://dx.doi.org/10.1016/S0047-2352\(01\)00134-9](http://dx.doi.org/10.1016/S0047-2352(01)00134-9)

Factors limiting female publishing in the field of criminal justice

“Research on scholarly productivity in science has consistently found that women scientists publish only 50–60 percent as many scholarly papers as men. Common limitations of this work include a focus on the hard sciences to the neglect of other fields and lack of controls for type of location or employment. This study contributed to the literature by investigating a soft science (criminal justice) and focusing on a particular location: scientists in tenure track, academic positions. Further, it was contended that females were more integrated into the male research networks in criminal justice than in the hard sciences. This greater integration should narrow the gap between male and female productivity. Data were based on eighty-nine faculty in Master's-level criminal justice departments. The results of a multiple regression analysis indicated that gender was not significantly associated with either the number of articles or the impact (citations) of scholarly work. The leading predictors of scholarly productivity included faculty rank and year of PhD. The full model explained 37 percent of the variance in article production and 44 percent of the variance in scholarly impact.”

## **Steinpreis, Anders, and Ritzke 1999**

[“The Impact of Gender on the Review of the Curricula Vitae of Job Applicants and Tenure Candidates: A National Empirical Study”](#). *Sex Roles*, 1999. Vol. 41 pg. 509-528. Doi: <https://doi.org/10.1023/A:1018839203698>

## Gender of names on CVs affects psychology job and tenure applicants

“The purpose of this study was to determine some of the factors that influence outside reviewers and search committee members when they are reviewing curricula vitae, particularly with respect to the gender of the name on the vitae. The participants in this study were 238 male and female academic psychologists who listed a university address in the 1997 Directory of the American Psychological Association. They were each sent one of four versions of a curriculum vitae (i.e., female job applicant, male job applicant, female tenure candidate, and male tenure candidate), along with a questionnaire and a self-addressed stamped envelope. All the curricula vitae actually came from a real-life scientist at two different stages in her career, but the names were changed to traditional male and female names. Although an exclusively between-groups design was used to avoid sparking gender conscious responding, the results indicate that the participants were clearly able to distinguish between the qualifications of the job applicants versus the tenure candidates, as evidenced by suggesting higher starting salaries, increased likelihood of offering the tenure candidates a job, granting them tenure, and greater respect for their teaching, research, and service records. Both men and women were more likely to vote to hire a male job applicant than a female job applicant with an identical record. Similarly, both sexes reported that the male job applicant had done adequate teaching, research, and service experience compared to the female job applicant with an identical record. In contrast, when men and women examined the highly competitive curriculum vitae of the real-life scientist who had gotten early tenure, they were equally likely to tenure the male and female tenure candidates and there was no difference in their ratings of their teaching, research, and service experience. There was no significant main effect for the quality of the institution or professional rank on selectivity in hiring and tenuring decisions. The results of this study indicate a gender bias for both men and women in preference for male job applicants.”

## Towers 2008

[“A Case Study of Gender Bias at the Postdoctoral Level in Physics, and its Resulting Impact on the Academic Career Advancement of Females”](#). 2008. Available from [arXiv.org:0804.2026](#)

Women get only 1/3 of conference presentations even though they are more productive than male counterparts. This also affects career advancement.

“This case study of a typical U.S. particle physics experiment explores the issues of gender bias and how it affects the academic career advancement prospects of women in the field of physics beyond the postdoctoral level; we use public databases to study the career paths of the full cohort of 57 former postdoctoral researchers on the Run II Dzero experiment to examine if males and females were treated in a gender-blind fashion on the experiment. The study finds that the female researchers were on average significantly more productive compared to their male peers, yet were allocated only 1/3 the amount of conference presentations based on their productivity. The study also finds that the dramatic gender bias in allocation of conference presentations appeared to have significant negative impact on the academic career advancement of the females. The author has a PhD in particle physics and worked for six years as a postdoctoral research scientist, five of which were spent collaborating at Fermilab. She is currently completing a graduate degree in statistics.”

### **Trix and Psenka 2003**

[“Exploring the Color of Glass: Letters of Recommendation for Female and Male Medical Faculty”](#). *Discourse Society*. Vol 3.2, pg. 191-220. 2003. Doi: <https://doi.org/10.1177/0957926503014002277>

Language of letters of reference for medical faculty differs by gender of the person for whom it is written.

“This study examines over 300 letters of recommendation for medical faculty at a large American medical school in the mid-1990s, using methods from corpus and discourse analysis, with the theoretical perspective of gender schema from cognitive psychology. Letters written for female applicants were found to differ systematically from those written for male applicants in the extremes of length, in the percentages lacking in basic features, in the percentages with doubt raisers (an extended category of negative language, often associated with apparent commendation), and in frequency of mention of status terms. Further, the most common semantically grouped possessive phrases referring to female and male applicants ('her teaching,' 'his research') reinforce gender schema that tend to portray women as teachers and students, and men as researchers and professionals.”

### **Valian 2005**

[“Beyond Gender Schemas: Improving the Advancement of Women in Academia”](#). *Hypatia: A Journal of Feminist Philosophy*, 2005. Vol. 20.3, pg. 198-213. Doi: <https://doi.org/10.1111/j.1527-2001.2005.tb00495.x>

How to advance women in academia

The author describes the discrepancy in experiences based on gender, examining the experimental data of various studies. She describes the cumulative impact of these experiences, as well as their impact on self-perception. Finally, she discusses why gender equity is important and how one can increase it.

### **Wenneras and Wold 1997**

[“Nepotism and sexism in peer-review”](#) *Nature*, 1997. Vol 387.6631, pg. 341-343. Doi: <http://doi.org/10.1038/387341a0>

Gender bias affects post-doctoral fellowships in Sweden. This was a landmark study on unconscious bias.

“Throughout the world, women leave their academic careers to a far greater extent than their male colleagues. In Sweden, for example, women are awarded 44 per cent of biomedical PhDs but hold a mere 25 per cent of the postdoctoral positions. It used to be thought that once there were enough entry-level female scientists, the male domination of the upper echelons of academic research would automatically diminish. But this has not happened in the biomedical field, where disproportionate numbers of men still hold higher academic positions, despite the significant numbers of women who have entered this research field since the 1970s.”

## Marriage

**Ledin, Bornmann, Gannon, and Wallon 2007**

[“A persistent problem: Traditional gender roles hold back female scientists”](#). *European Molecular Biology Organization Reports*, 2007. Vol 8.11, pg. 982 -987. Doi: <https://doi.org/10.1038/sj.embor.7401109>

Gender's influence on various parts of a scientist's career

The researchers examined the success rate of female applicants who apply for the European Molecular Biology Organization's (EMBO) Long-Term Fellowships (LTFs) and the Young Investigator Programme (YIP), which is typically lower than the rate for male applicants. They investigated different factors which could result in this bias, including names on applications, language of CVs, and bibliometric data. They found that women typically have a lower publication rate. Finally, they investigate the possible causes for lower productivity, which can include social factors such as family. They conclude that a number of factors combine to affect women's success rate.

## Parenting

**Council of Canadian Academies 2012**

[“Strengthening Canada's Research Capacity: The Gender Dimension – The Expert Panel on Women in University Research”](#). 2012.

“Question: What policies and what societal, cultural, and institutional, economic, and/or other relevant factors influence the career trajectory of women researchers in Canadian universities and underlie gender disparities observed in Canadian university researcher's statistical profile, by discipline area, rank, duty/position/stature, salary, tenure, research funding and or/any other relevant indicators?”

“The major findings from the statistical profile are:

In general, the Canadian profile is similar to that of other economically advanced nations.

Women's progress in Canadian universities is uneven and dependent on discipline and rank.

The higher the rank, the lower the percentage of women in comparison to men.

The key factors determined by the Panel that impact the career paths of women start early in life with stereotypes that define roles and expectations, followed by a lack of knowledge about requisites for potential career paths, and a lack of role models and mentors. These issues, combined with a rigid tenure track structure, challenges associated with the paid work-family life balance, and the importance of increased support and coordination amongst governments and institutions should be examined if Canada is going to achieve a greater gender balance within academia.”

### **Ledin, Bornmann, Gannon, and Wallon 2007**

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## **Race/Ethnicity**

### **Corrice 2009**

[“Unconscious bias in faculty and leadership recruitment: A literature review”](#) *Association of American Medical Colleges Analysis in Brief*, 2009. Vol. 9.2.

“Although women and minorities have made significant strides in achieving equality in the workplace, they are still underrepresented in the upper strata of organizations, including senior faculty and leadership positions at medical schools and teaching hospitals. Within the last decade, social science researchers have pursued the theory of “unconscious bias” as one barrier to workplace equality that may persist despite a general commitment to increase diversity across the academic medicine workforce and other organizations. This Analysis in Brief reviews the scientific literature on the theory of unconscious bias, explores the role of unconscious bias in job recruitment and evaluations, and offers suggestions for search committees and others involved in hiring decisions at medical schools and teaching hospitals.”

### **Jacoby-Senghor, Sinclair, and Shelton 2016**

[“A lesson in bias: The relationship between implicit racial bias and performance in pedagogical contexts”](#). *Journal of Experimental Social Psychology*, 2016. Vol. 63, pg. 50-55. Doi: <http://dx.doi.org/10.1016/j.jesp.2015.10.010>

Racial bias of instructor negatively affects the students

“We posit instructors' implicit racial bias as a factor in racial disparities in academic achievement and test the relationship between this factor, instructor lesson quality, and learners' subsequent test performance. In Study 1, white participants were assigned to the role of instructor and gave a short lesson to a learner who was either black or white. Instructors' implicit bias predicted diminished test performance on the part of black, but not white, learners. Further, instructors' anxiety and lesson

quality, as rated by coders, mediated the relationship between their implicit bias and learners' test performance. In Study 2, a separate sample of non-black participants watched videos of instructors from cross-race lessons from the first experiment. Once again, instructors' implicit bias predicted diminished test performance by participants. These findings suggest that underperformance by minorities in academic domains may be driven by the effect implicit racial biases have on educators' pedagogical effectiveness."

#### **Kawakami, Dovidio, Moll, Hermsen, and Russin 2000**

["Just say no \(to stereotyping\): effects of training in the negation of stereotypic associations on stereotype activation"](#). *Journal of Personality and Social Psychology*, 2000. Vol 78.5, pg. 871-888. Doi: <http://dx.doi.org/10.1037/0022-3514.78.5.871>

#### **Training works to combat stereotyping**

"The primary aim of the present research was to examine the effect of training in negating stereotype associations on stereotype activation. Across 3 studies, participants received practice in negating stereotypes related to skinhead and racial categories. The subsequent automatic activation of stereotypes was measured using either a primed Stroop task (Studies 1 and 2) or a person categorization task (Study 3). The results demonstrate that when receiving no training or training in a nontarget category stereotype, participants exhibited spontaneous stereotype activation. After receiving an extensive amount of training related to a specific category, however, participants demonstrated reduced stereotype activation. The results from the training task provide further evidence for the impact of practice on participants' proficiency in negating stereotypes."

#### **Legault, Gutsell, and Inzlicht 2011**

["Ironic Effects of Antiprejudice Messages: How Motivational Interventions Can Reduce \(but Also Increase\) Prejudice"](#) *Psychological Science*, 2011. Vol 22.12, pg. 1472-1477. Doi: <http://doi.org/10.1177/0956797611427918>

The type of anti-prejudice message matters. If it's autonomous motivation, it decreases prejudice, but if it's a societal requirement, it can increase prejudice.

"Although prejudice-reduction policies and interventions abound, is it possible that some of them result in the precise opposite of their intended effect—an increase in prejudice? We examined this question by exploring the impact of motivation-based prejudice-reduction interventions and assessing whether certain popular practices might in fact increase prejudice. In two experiments, participants received detailed information on, or were primed with, the goal of prejudice reduction; the information and primes either encouraged autonomous motivation to regulate prejudice or emphasized the societal requirement to control prejudice. Ironically, motivating people to reduce prejudice by emphasizing external control produced more explicit and implicit prejudice than did not intervening at all. Conversely, participants in whom autonomous motivation to regulate prejudice was induced displayed less explicit and implicit prejudice compared with no-treatment control participants. We outline



strategies for effectively reducing prejudice and discuss the detrimental consequences of enforcing antiprejudice standards.”

### **Milkman, Akinola, and Chugh 2012**

“[Temporal Distance and Discrimination: An Audit Study in Academia](#)”. *Psychological Science*, 2012. Pg. 1-8. Doi: <https://doi.org/10.1177/0956797611434539>

Discrimination against women and minorities by professors when planning meetings

“Through a field experiment set in academia (with a sample of 6,548 professors), we found that decisions about distant-future events were more likely to generate discrimination against women and minorities (relative to Caucasian males) than were decisions about near-future events. In our study, faculty members received e-mails from fictional prospective doctoral students seeking to schedule a meeting either that day or in 1 week; students’ names signaled their race (Caucasian, African American, Hispanic, Indian, or Chinese) and gender. When the requests were to meet in 1 week, Caucasian males were granted access to faculty members 26% more often than were women and minorities; also, compared with women and minorities, Caucasian males received more and faster responses. However, these patterns were essentially eliminated when prospective students requested a meeting that same day. Our identification of a temporal discrimination effect is consistent with the predictions of construal-level theory and implies that subtle contextual shifts can alter patterns of race- and gender-based discrimination.”

### **Milkman, Akinola, and Chugh 2014**

“[What Happens Before? A Field Experiment Exploring How Pay and Representation Differentially Shape Bias on the Pathway into Organizations](#)”. *Journal of Applied Psychology*, 2014. Doi: <http://dx.doi.org/10.2139/ssrn.2063742>

Faculty responses to students discussing research opportunities were biased in favor of white males above all other categories

“Little is known about how discrimination manifests before individuals formally apply to organizations or how it varies within and between organizations. We address this knowledge gap through an audit study in academia of over 6,500 professors at top U.S. universities drawn from 89 disciplines and 259 institutions. In our experiment, professors were contacted by fictional prospective students seeking to discuss research opportunities prior to applying to a doctoral program. Names of students were randomly assigned to signal gender and race (Caucasian, Black, Hispanic, Indian, Chinese), but messages were otherwise identical. We hypothesized that discrimination would appear at the informal “pathway” preceding entry to academia and would vary by discipline and university as a function of faculty representation and pay. We found that when considering requests from prospective students seeking mentoring in the future, faculty were significantly more responsive to Caucasian males than to all other categories of students, collectively, particularly in higher-paying disciplines and private institutions. Counterintuitively, the representation of women and minorities and discrimination were uncorrelated, a finding that suggests greater representation cannot be assumed to reduce discrimination. This research

highlights the importance of studying decisions made before formal entry points into organizations and reveals that discrimination is not evenly distributed within and between organizations.”

#### **Miller 2016**

“‘[White sanction’](#), institutional, group and individual interaction in the promotion and progression of black and minority ethnic academics and teachers in England”. *Power and Education*, 2016. Pg. 1-17. Doi: <https://doi.org/10.1177/1757743816672880>

Black and minority ethnic experiences in academia, and the perceived need for “white sanction”

“The promotion and progression of black and minority ethnic academics and teachers in England has been the subject of much debate. Although several theories have been put forward, racial equality has stood out as a major contributing factor. The experiences of black and minority ethnic academics and teachers in England are similar in terms of aspirations, and their experience of organisations also points to similar patterns of exclusions. This integrated study provides thick data from qualitative interviews with academics and teachers, theorised through the lens of whiteness theory and social identity theory, of their experience of promotion and progression, how they feel organisations respond to them and how they, in turn, are responding to promotion and progression challenges. There was a shared view amongst the participants that, for black and minority ethnic academics and teachers to progress in England, they need ‘white sanction’ – a form of endorsement from white colleagues that in itself has an enabling power.”

#### **Monzo and SooHoo 2014**

“[Translating the Academy: Learning the Racialized Languages of Academia](#)”. *Journal of Diversity in Higher Education*, 2014. Vol. 7.3, pg. 147-165. Doi: <http://dx.doi.org/10.1037/a0037400>

Experiences of two women of color in academia

“This article presents narratives of 2 women faculty of color, 1 early career Latina and the other tenured Asian American woman, regarding their ontological and epistemological struggles in academia, as well as the hope, impetus, and strategies for change that they constructed together. Drawing on a critical pedagogy perspective, mentoring is discussed as a praxis of allyship that develops organically within relationships that recognize each person’s strengths, provides instrumental knowledge about the academy, provides intellectual stimulation and reciprocal reflection, and is a collaborative endeavor that helps them to resist erasure and insert visibly diverse knowledge systems into people’s academic pursuits and responsibilities.”

#### **Rudman, Ashmore, and Gary 2001**

“‘[Unlearning’ automatic biases: The malleability of implicit prejudice and stereotypes](#)”. *Journal of Personality and Social Psychology*, 2001. Vol. 81.5 pg. 856–868. Doi: <http://dx.doi.org/10.1037/0022-3514.81.5.856>

Diversity education is successful in reducing biases and implicit prejudice.

“The present research suggests that automatic and controlled intergroup biases can be modified through diversity education. In 2 experiments, students enrolled in a prejudice and conflict seminar showed significantly reduced implicit and explicit anti-Black biases, compared with control students. The authors explored correlates of prejudice and stereotype reduction. In each experiment, seminar students' implicit and explicit change scores positively covaried with factors suggestive of affective and cognitive processes, respectively. The findings show the malleability of implicit prejudice and stereotypes and suggest that these may effectively be changed through affective processes.”

### **Steele and Aronson 1995**

“[Stereotype Threat and the Intellectual Test Performance of African Americans](http://dx.doi.org/10.1037/0022-3514.69.5.797)”. *Journal of Personality and Social Psychology*, 1995. Vol. 69.5, pg. 797-811. Doi: <http://dx.doi.org/10.1037/0022-3514.69.5.797>

Black students will underperform when feeling the pressure of negative stereotypes.

“Stereotype threat is being at risk of confirming, as self-characteristic, a negative stereotype about one's group. Studies 1 and 2 varied the stereotype vulnerability of Black participants taking a difficult verbal test by varying whether or not their performance was ostensibly diagnostic of ability, and thus, whether or not they were at risk of fulfilling the racial stereotype about their intellectual ability. Reflecting the pressure of this vulnerability, Blacks underperformed in relation to Whites in the ability-diagnostic condition but not in the nondiagnostic condition (with Scholastic Aptitude Tests controlled). Study 3 validated that ability-diagnosticity cognitively activated the racial stereotype in these participants and motivated them not to conform to it, or to be judged by it. Study 4 showed that mere salience of the stereotype could impair Blacks' performance even when the test was not ability diagnostic. The role of stereotype vulnerability in the standardized test performance of ability-stigmatized groups is discussed.”

## **Ability**

### **Kattari 2015**

“[Examining Ableism in Higher Education through Social Dominance Theory and Social Learning Theory](https://doi.org/10.1007/s10755-015-9320-0)”. *Innovative Higher Education*, 2015. Vol. 40, pg. 375-386. Doi: <https://doi.org/10.1007/s10755-015-9320-0>

Examining the need for different interactions and ally behavior between able-bodied professors and students with disabilities

“In most societies, some social identity groups hold a disproportionate amount of social, cultural, and economic power, while other groups hold little. In contemporary U.S. society, examples of this power are evident around issues of ability/disability, with able-bodied individuals wielding social dominance and people with disabilities experiencing a lack of social, cultural, and economic power. However, this relationship between able-bodied individuals and people with disabilities is neither static nor determinant; and through social modeling it may be altered to foster increased positive outcomes for

people with disabilities, including both undergraduate and graduate students. As educators and institutional staff members frequently engage with students with disabilities, improving ally behavior and overall accessibility will increase rapport building with students, leading to more just and equitable interactions.”

## Sexuality

**Ewing, Stukas Jr., and Sheehan 2003**

“[Student Prejudice Against Gay Male and Lesbian Lecturers](#)”. *The Journal of Social Psychology*, 2003. Vol. 143.5, pg. 569-579. Doi: <http://dx.doi.org/10.1080/00224540309598464>

Perceptions of lecturers based on sexual orientation

“The authors examined whether gay men and lesbians are evaluated more negatively than individuals of unspecified sexual orientation when attributional ambiguity surrounds evaluations and whether they are evaluated similarly to unspecified others when no attributional ambiguity is present. One male and one female lecturer delivered either a strong or a weak lecture to students who either (a) believed that the lecturer was a gay man or a lesbian or (b) did not receive sexual orientation information. Contrary to predictions, the quality of the lecture did not influence the ratings of known gay male and lesbian lecturers, although lecture quality strongly influenced ratings of lecturers whose sexual orientation was unspecified. After strong lectures, participants rated known gay male and lesbian lecturers more negatively than they did lecturers whose sexual orientation was unspecified. After weak lectures, participants rated known gay male and lesbian lecturers more positively than they did the others. The authors discussed the possibility that students might moderate their ratings to avoid discriminating against gay and lesbian lecturers.”

## Age

**Kawakami, Dovidio, Moll, Hermsen, and Russin 2000**

“[Just say no \(to stereotyping\): effects of training in the negation of stereotypic associations on stereotype activation](#)”. *Journal of Personality and Social Psychology*, 2000. Vol 78.5, pg. 871-888. Doi: <http://dx.doi.org/10.1037/0022-3514.78.5.871>

Training works to combat stereotyping

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reduced stereotype activation. The results from the training task provide further evidence for the impact of practice on participants' proficiency in negating stereotypes.”

### **Marsh, Jayasinghe, and Bond 2008**

“[Improving the Peer-Review Process for Grant Applications: Reliability, Validity, Bias, and Generalizability](#)”. *American Psychologist*, 2008. Vol. 63.3, pg. 160-168. Doi: <http://dx.doi.org/10.1037/0003-066X.63.3.160>

Peer-review is a flawed process, and the “reader system” is more reliable.

“Peer review is a gatekeeper, the final arbiter of what is valued in academia, but it has been criticized in relation to traditional psychological research criteria of reliability, validity, generalizability, and potential biases. Despite a considerable literature, there is surprisingly little sound peer-review research examining these criteria or strategies for improving the process. This article summarizes the authors' research program with the Australian Research Council, which receives thousands of grant proposals from the social science, humanities, and science disciplines and reviews by assessors from all over the world. Using multilevel cross-classified models, the authors critically evaluated peer reviews of grant applications and potential biases associated with applicants, assessors, and their interaction (e.g., age, gender, university, academic rank, research team composition, nationality, experience). Peer reviews lacked reliability, but the only major systematic bias found involved the inflated, unreliable, and invalid ratings of assessors nominated by the applicants themselves. The authors propose a new approach, the reader system, which they evaluated with psychology and education grant proposals and found to be substantially more reliable and strategically advantageous than traditional peer reviews of grant applications.”

## **Education/Class**

### **England 2010**

“[The Gender Revolution: Uneven and Stalled](#)”. *Sociologists for Women in Society Feminist Lecture in Gender and Society*, 2010. Vol. 24.2, pg. 149-166. Doi: <https://doi.org/10.1177/0891243210361475>

Why some women have taken “male” jobs, but males have not taken “female” jobs

“In this article, the author describes sweeping changes in the gender system and offers explanations for why change has been uneven. Because the devaluation of activities done by women has changed little, women have had strong incentive to enter male jobs, but men have had little incentive to take on female activities or jobs. The gender egalitarianism that gained traction was the notion that women should have access to upward mobility and to all areas of schooling and jobs. But persistent gender essentialism means that most people follow gender-typical paths except when upward mobility is impossible otherwise. Middle-class women entered managerial and professional jobs more than working-class women integrated blue-collar jobs because the latter were able to move up while choosing a “female” occupation; many mothers of middle-class women were already in the highest-

status female occupations. The author also notes a number of gender-egalitarian trends that have stalled.”

### **Marsh, Jayasinghe, and Bond 2008**

“[Improving the Peer-Review Process for Grant Applications: Reliability, Validity, Bias, and Generalizability](#)”. *American Psychologist*, 2008. Vol. 63.3, pg. 160-168. Doi: <http://dx.doi.org/10.1037/0003-066X.63.3.160>

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## **Type of document**

### **Study**

### **Bornmann, Mutz, and Daniel 2009**

“[The influence of the applicant's gender on the modeling of a peer review process by using latent Markov models](#)”. *Scientometrics*, 2009, Vol. 81.2, pg. 407-411. Doi: <http://doi.org/10.1007/s11192-008-2189-2>

The effect of gender on the peer review process

“In the grant peer review process we can distinguish various evaluation stages in which assessors judge applications on a rating scale. Bornmann & al. [2008] show that latent Markov models offer a fundamentally good opportunity to model statistically peer review processes. The main objective of this short communication is to test the influence of the applicants' gender on the modeling of a peer review

process by using latent Markov models. We found differences in transition probabilities from one stage to the other for applications for a doctoral fellowship submitted by male and female applicants.”

**Budden, Tregenza, Aarssen, Koricheva, Leimu, and Lortie 2008**

“[Double-Blind Review Favours Increased Representation of Female Authors](#)”. *Trends in Ecology and Evolution*, 2008. Vol. 23.1, pg. 4–6. Doi: <http://dx.doi.org/10.1016/j.tree.2007.07.008>

Double-blind review for journals increases the number of female submissions published.

“Double-blind peer review, in which neither author nor reviewer identity are revealed, is rarely practised in ecology or evolution journals. However, in 2001, double-blind review was introduced by the journal *Behavioral Ecology*. Following this policy change, there was a significant increase in female first-authored papers, a pattern not observed in a very similar journal that provides reviewers with author information. No negative effects could be identified, suggesting that double-blind review should be considered by other journals.”

**Carnes, Bartels, Kaatz, and Kolehmainen 2015**

“[Why is John More Likely to Become Department Chair Than Jennifer?](#)” *Transactions of the American Clinical and Climatological Association*, ND 2015. Vol. 126, pg. 197-214.

Gender bias in medical school and its effects on experience and leadership

“This article reviews some of our research on how gender stereotypes and their accompanying assumptions and expectations can influence the careers of male and female physicians and scientists in a myriad of subtle ways. Although stereotype-based cognitive biases may be invisible and unintentional, they nevertheless shape the experiences of women in academic medicine in ways that frequently constrain their opportunities. We present research on the following: 1) subtle differences in the evaluation of male and female medical students as revealed through text analysis of written evaluations at a critical career juncture, 2) how cultural assumptions about the way men and women should and should not behave influence medical residents’ experiences as leaders, and 3) how approaching gender bias among faculty in academic medicine, science, and engineering as a remedial habit can be successful in changing individual behaviors and in improving department climate.”

**Carnes, Devine, Manwell, Byars-Winston, Fine, Ford, Forscher, Isaac, Kaatz, Magua, Palta, and Sheridan 2015**

“[Effect of an Intervention to Break the Gender Bias Habit for Faculty at One Institution: A Cluster Randomized, Controlled Trial](#)”. *Academic Medicine*, Feb 2015. Vol. 90.2 pg. 221-230. Doi: <https://doi.org/10.1097/ACM.0000000000000552>

Intervention can help change implicit bias in university departments, specifically academic medicine, science, and engineering.

## “Purpose

Despite sincere commitment to egalitarian, meritocratic principles, subtle gender bias persists, constraining women’s opportunities for academic advancement. The authors implemented a pair-matched, single-blind, cluster-randomized, controlled study of a gender bias habit-changing intervention at a large public university.

## Method

Participants were faculty in 92 departments or divisions at the University of Wisconsin-Madison. Between September 2010 and March 2012, experimental departments were offered a gender bias habit-changing intervention as a 2.5 hour workshop. Surveys measured gender bias awareness; motivation, self-efficacy, and outcome expectations to reduce bias; and gender equity action. A timed word categorization task measured implicit gender/leadership bias. Faculty completed a worklife survey before and after all experimental departments received the intervention. Control departments were offered workshops after data were collected.

## Results

Linear mixed-effects models showed significantly greater changes post-intervention for faculty in experimental vs. control departments on several outcome measures, including self-efficacy to engage in gender equity promoting behaviors ( $P = .013$ ). When  $\geq 25\%$  of a department’s faculty attended the workshop (26 of 46 departments), significant increases in self-reported action to promote gender equity occurred at 3 months ( $P = .007$ ). Post-intervention, faculty in experimental departments expressed greater perceptions of fit ( $P = .024$ ), valuing of their research ( $P = .019$ ), and comfort in raising personal and professional conflicts ( $P = .025$ ).

## Conclusions

An intervention that facilitates intentional behavioral change can help faculty break the gender bias habit and change department climate in ways that should support the career advancement of women in academic medicine, science, and engineering.”

## Corcoran, Hundhammer, and Mussweiler 2009

“[A tool for thought! When comparative thinking reduces stereotyping effects](http://dx.doi.org/10.1016/j.jesp.2009.04.015)”. *Journal of Experimental Social Psychology*, 2009. Vol 45, pg. 1008-1011. Doi: <http://dx.doi.org/10.1016/j.jesp.2009.04.015>

Comparative thinking helps reduce stereotyping.

“Stereotypes have pervasive, robust, and often unwanted effects on how people see and behave towards others. Undoing these effects has proven to be a daunting task. Two studies demonstrate that procedurally priming participants to engage in comparative thinking with a generalized focus on differences reduces behavioral and judgmental stereotyping effects. In Study 1, participants who were procedurally primed to focus on differences sat closer to a skinhead – a member of a negatively stereotyped group. In Study 2, participants primed on differences ascribed less gender stereotypic characteristics to a male and female target person. This suggests that comparative thinking with a focus



on differences may be a simple cognitive tool to reduce the behavioral and judgmental effects of stereotyping.”

#### **Dasgupta and Asgari 2004**

“[Seeing is believing: Exposure to counterstereotypic women leaders and its effect on the malleability of automatic gender stereotyping](#)”. *Journal of Experimental Social Psychology*, 2004. Vol 40, pg. 642-658. Doi: <http://dx.doi.org/10.1016/j.jesp.2004.02.003>

Exposure to female leaders counteracts gender stereotyping

“Two studies tested the conditions under which social environments can undermine automatic gender stereotypic beliefs expressed by women. Study 1, a laboratory experiment, manipulated exposure to biographical information about famous female leaders. Study 2, a year-long field study, took advantage of pre-existing differences in the proportion of women occupying leadership positions (e.g., female professors) in two naturally occurring environments—a women’s college and a coeducational college. Together, these studies investigated: (a) whether exposure to women in leadership positions can temporarily undermine women’s automatic gender stereotypic beliefs, and (b) whether this effect is mediated by the frequency with which female leaders are encountered. Results revealed first that when women were in social contexts that exposed them to female leaders, they were less likely to express automatic stereotypic beliefs about their ingroup (Studies 1 and 2). Second, Study 2 showed that the long-term effect of social environments (women’s college vs. coed college) on automatic gender stereotyping was mediated by the frequency of exposure to women leaders (i.e., female faculty). Third, some academic environments (e.g., classes in male-dominated disciplines like science and math) produced an increase in automatic stereotypic beliefs among students at the coed college but not at the women’s college—importantly, this effect was mediated by the sex of the course instructors. Together, these findings underscore the power of local environments in shaping women’s nonconscious beliefs about their ingroup.”

#### **Ewing, Stukas Jr., and Sheehan 2003**

“[Student Prejudice Against Gay Male and Lesbian Lecturers](#)”. *The Journal of Social Psychology*, 2003. Vol. 143.5, pg. 569-579. Doi: <http://dx.doi.org/10.1080/00224540309598464>

Perceptions of lecturers based on sexual orientation

“The authors examined whether gay men and lesbians are evaluated more negatively than individuals of unspecified sexual orientation when attributional ambiguity surrounds evaluations and whether they are evaluated similarly to unspecified others when no attributional ambiguity is present. One male and one female lecturer delivered either a strong or a weak lecture to students who either (a) believed that the lecturer was a gay man or a lesbian or (b) did not receive sexual orientation information. Contrary to predictions, the quality of the lecture did not influence the ratings of known gay male and lesbian lecturers, although lecture quality strongly influenced ratings of lecturers whose sexual orientation was unspecified. After strong lectures, participants rated known gay male and lesbian lecturers more negatively than they did lecturers whose sexual orientation was unspecified. After weak lectures,

participants rated known gay male and lesbian lecturers more positively than they did the others. The authors discussed the possibility that students might moderate their ratings to avoid discriminating against gay and lesbian lecturers.”

**Grunspan, Eddy, Brownell, Wiggins, Crowe, and Goodreau 2016**

“[Males Under-Estimate Academic Performance of Their Female Peers in Undergraduate Biology Classrooms](https://doi.org/10.1371/journal.pone.0148405)”. *PLoS One*, 2016. Vol. 11.2. Doi: <https://dx.doi.org/10.1371/journal.pone.0148405>

Male underestimation of female peers in biology

“Women who start college in one of the natural or physical sciences leave in greater proportions than their male peers. The reasons for this difference are complex, and one possible contributing factor is the social environment women experience in the classroom. Using social network analysis, we explore how gender influences the confidence that college-level biology students have in each other’s mastery of biology. Results reveal that males are more likely than females to be named by peers as being knowledgeable about the course content. This effect increases as the term progresses, and persists even after controlling for class performance and outspokenness. The bias in nominations is specifically due to males over-nominating their male peers relative to their performance. The over-nomination of male peers is commensurate with an overestimation of male grades by 0.57 points on a 4 point grade scale, indicating a strong male bias among males when assessing their classmates. Females, in contrast, nominated equitably based on student performance rather than gender, suggesting they lacked gender biases in filling out these surveys. These trends persist across eleven surveys taken in three different iterations of the same Biology course. In every class, the most renowned students are always male. This favoring of males by peers could influence student self-confidence, and thus persistence in this STEM discipline.”

**Haswell and Haswell 1996**

“[Gender Bias and Critique of Student Writing](https://doi.org/10.1016/S1075-2935(96)90004-5)”. *Assessing Writing*, 1996. Vol. 3.1, pg. 31-83. Doi: [https://doi.org/10.1016/S1075-2935\(96\)90004-5](https://doi.org/10.1016/S1075-2935(96)90004-5)

The effect of gender on the critique of student writing

“The main purpose of this empirical investigation into gender and writing instruction is to locate ways that the critique of readers may be affected by their foreknowledge of the student writer's sex. Thirty-two teachers and 32 students evaluated and diagnosed no student essays, neither overtly marked as to the sex of the writer. Independent variables controlled for were sex of reader, sex of the interviewer who prompted response during the taped session, professional status of participant (student or teacher), and knowledge of author's biological sex by participant (prior knowledge or no prior knowledge). Statistical analysis found gender interacting with all these variables. Among other associations, readers spontaneously constructed the author's sex even when they had not been informed of it; they rated the essays lower when they knew the writer was of their own sex, as measured by holistic rating and percentage of positive critique; they showed an anti-male bias as measured by holistic rating, and an anti-feminine bias as measured by attribution of agency to the writing; and they tended to suppress gender, as measured by the amount of agency that they passivized

or made neutral. In sum, the study found evidence for the active presence of gender effects, especially via polarized gender stereotypes, as students and teachers appraise student writing.”

#### **Jacoby-Senghor, Sinclair, and Shelton 2016**

“[A lesson in bias: The relationship between implicit racial bias and performance in pedagogical contexts](#)”. *Journal of Experimental Social Psychology*, 2016. Vol. 63, pg. 50-55. Doi: <http://dx.doi.org/10.1016/j.jesp.2015.10.010>

Racial bias of instructor negatively affects the students

“We posit instructors' implicit racial bias as a factor in racial disparities in academic achievement and test the relationship between this factor, instructor lesson quality, and learners' subsequent test performance. In Study 1, white participants were assigned to the role of instructor and gave a short lesson to a learner who was either black or white. Instructors' implicit bias predicted diminished test performance on the part of black, but not white, learners. Further, instructors' anxiety and lesson quality, as rated by coders, mediated the relationship between their implicit bias and learners' test performance. In Study 2, a separate sample of non-black participants watched videos of instructors from cross-race lessons from the first experiment. Once again, instructors' implicit bias predicted diminished test performance by participants. These findings suggest that underperformance by minorities in academic domains may be driven by the effect implicit racial biases have on educators' pedagogical effectiveness.”

#### **Kawakami, Dovidio, Moll, Hermsen, and Russin 2000**

“[Just say no \(to stereotyping\): effects of training in the negation of stereotypic associations on stereotype activation](#)”. *Journal of Personality and Social Psychology*, 2000. Vol 78.5, pg. 871-888. Doi: <http://dx.doi.org/10.1037/0022-3514.78.5.871>

Training works to combat stereotyping

“The primary aim of the present research was to examine the effect of training in negating stereotype associations on stereotype activation. Across 3 studies, participants received practice in negating stereotypes related to skinhead and racial categories. The subsequent automatic activation of stereotypes was measured using either a primed Stroop task (Studies 1 and 2) or a person categorization task (Study 3). The results demonstrate that when receiving no training or training in a nontarget category stereotype, participants exhibited spontaneous stereotype activation. After receiving an extensive amount of training related to a specific category, however, participants demonstrated reduced stereotype activation. The results from the training task provide further evidence for the impact of practice on participants' proficiency in negating stereotypes.”

#### **Knobloch-Westerwick, Glynn, and Hoge 2013**

["The Matilda Effect in Science Communication: An Experiment on Gender Bias in Publication Quality Perceptions and Collaboration Interest"](https://doi.org/10.1177/1075547012472684). *Science Communication*, 2013. Vol 35, pg. 603-625. Doi: <https://doi.org/10.1177/1075547012472684>

Gender affects perception of the author of scientific conference abstracts

"An experiment with 243 young communication scholars tested hypotheses derived from role congruity theory regarding impacts of author gender and gender typing of research topics on perceived quality of scientific publications and collaboration interest. Participants rated conference abstracts ostensibly authored by females or males, with author associations rotated. The abstracts fell into research areas perceived as gender-typed or gender-neutral to ascertain impacts from gender typing of topics. Publications from male authors were associated with greater scientific quality, in particular if the topic was male-typed. Collaboration interest was highest for male authors working on male-typed topics. Respondent sex did not influence these patterns."

### **Legault, Gutsell, and Inzlicht 2011**

["Ironic Effects of Antiprejudice Messages: How Motivational Interventions Can Reduce \(but Also Increase\) Prejudice"](https://doi.org/10.1177/0956797611427918) *Psychological Science*, 2011. Vol 22.12, pg. 1472-1477. Doi: <https://doi.org/10.1177/0956797611427918>

The type of anti-prejudice message matters. If it's autonomous motivation, it decreases prejudice, but if it's a societal requirement, it can increase prejudice.

"Although prejudice-reduction policies and interventions abound, is it possible that some of them result in the precise opposite of their intended effect—an increase in prejudice? We examined this question by exploring the impact of motivation-based prejudice-reduction interventions and assessing whether certain popular practices might in fact increase prejudice. In two experiments, participants received detailed information on, or were primed with, the goal of prejudice reduction; the information and primes either encouraged autonomous motivation to regulate prejudice or emphasized the societal requirement to control prejudice. Ironically, motivating people to reduce prejudice by emphasizing external control produced more explicit and implicit prejudice than did not intervening at all. Conversely, participants in whom autonomous motivation to regulate prejudice was induced displayed less explicit and implicit prejudice compared with no-treatment control participants. We outline strategies for effectively reducing prejudice and discuss the detrimental consequences of enforcing antiprejudice standards."

### **Milkman, Akinola, and Chugh 2012**

["Temporal Distance and Discrimination: An Audit Study in Academia"](https://doi.org/10.1177/0956797611434539). *Psychological Science*, 2012. Pg. 1-8. Doi: <https://doi.org/10.1177/0956797611434539>

Discrimination against women and minorities by professors when planning meetings

"Through a field experiment set in academia (with a sample of 6,548 professors), we found that decisions about distant-future events were more likely to generate discrimination against women and

minorities (relative to Caucasian males) than were decisions about near-future events. In our study, faculty members received e-mails from fictional prospective doctoral students seeking to schedule a meeting either that day or in 1 week; students' names signaled their race (Caucasian, African American, Hispanic, Indian, or Chinese) and gender. When the requests were to meet in 1 week, Caucasian males were granted access to faculty members 26% more often than were women and minorities; also, compared with women and minorities, Caucasian males received more and faster responses. However, these patterns were essentially eliminated when prospective students requested a meeting that same day. Our identification of a temporal discrimination effect is consistent with the predictions of construal-level theory and implies that subtle contextual shifts can alter patterns of race- and gender-based discrimination."

#### **Milkman, Akinola, and Chugh 2014**

["What Happens Before? A Field Experiment Exploring How Pay and Representation Differentially Shape Bias on the Pathway into Organizations"](http://dx.doi.org/10.2139/ssrn.2063742). *Journal of Applied Psychology*, 2014. Doi: <http://dx.doi.org/10.2139/ssrn.2063742>

Faculty responses to students discussing research opportunities were biased in favor of white males above all other categories

"Little is known about how discrimination manifests before individuals formally apply to organizations or how it varies within and between organizations. We address this knowledge gap through an audit study in academia of over 6,500 professors at top U.S. universities drawn from 89 disciplines and 259 institutions. In our experiment, professors were contacted by fictional prospective students seeking to discuss research opportunities prior to applying to a doctoral program. Names of students were randomly assigned to signal gender and race (Caucasian, Black, Hispanic, Indian, Chinese), but messages were otherwise identical. We hypothesized that discrimination would appear at the informal "pathway" preceding entry to academia and would vary by discipline and university as a function of faculty representation and pay. We found that when considering requests from prospective students seeking mentoring in the future, faculty were significantly more responsive to Caucasian males than to all other categories of students, collectively, particularly in higher-paying disciplines and private institutions. Counterintuitively, the representation of women and minorities and discrimination were uncorrelated, a finding that suggests greater representation cannot be assumed to reduce discrimination. This research highlights the importance of studying decisions made before formal entry points into organizations and reveals that discrimination is not evenly distributed within and between organizations."

#### **Moss-Racusin, Dovidio, Brescoll, Graham, and Handelsman 2012**

["Science faculty's subtle gender biases favor male students"](https://doi.org/10.1073/pnas.1211286109). *PNAS*, 2012. Vol 109.41. doi: <https://doi.org/10.1073/pnas.1211286109>

Bias against lab manager applications with female names, rather than male names

"Despite efforts to recruit and retain more women, a stark gender disparity persists within academic science. Abundant research has demonstrated gender bias in many demographic groups, but has yet to

experimentally investigate whether science faculty exhibit a bias against female students that could contribute to the gender disparity in academic science. In a randomized double-blind study (n = 127), science faculty from research-intensive universities rated the application materials of a student—who was randomly assigned either a male or female name—for a laboratory manager position. Faculty participants rated the male applicant as significantly more competent and hireable than the (identical) female applicant. These participants also selected a higher starting salary and offered more career mentoring to the male applicant. The gender of the faculty participants did not affect responses, such that female and male faculty were equally likely to exhibit bias against the female student. Mediation analyses indicated that the female student was less likely to be hired because she was viewed as less competent. We also assessed faculty participants' preexisting subtle bias against women using a standard instrument and found that preexisting subtle bias against women played a moderating role, such that subtle bias against women was associated with less support for the female student, but was unrelated to reactions to the male student. These results suggest that interventions addressing faculty gender bias might advance the goal of increasing the participation of women in science."

#### **Rudman, Ashmore, and Gary 2001**

["'Unlearning' automatic biases: The malleability of implicit prejudice and stereotypes"](#). *Journal of Personality and Social Psychology*, 2001. Vol. 81.5 pg. 856–868. Doi: <http://dx.doi.org/10.1037/0022-3514.81.5.856>

Diversity education is successful in reducing biases and implicit prejudice.

"The present research suggests that automatic and controlled intergroup biases can be modified through diversity education. In 2 experiments, students enrolled in a prejudice and conflict seminar showed significantly reduced implicit and explicit anti-Black biases, compared with control students. The authors explored correlates of prejudice and stereotype reduction. In each experiment, seminar students' implicit and explicit change scores positively covaried with factors suggestive of affective and cognitive processes, respectively. The findings show the malleability of implicit prejudice and stereotypes and suggest that these may effectively be changed through affective processes."

#### **Shields, Zawadzki, and Johnson 2011**

["The Impact of the Workshop Activity for Gender Equity Simulation in the Academy \(WAGES–Academic\) in Demonstrating Cumulative Effects of Gender Bias"](#). *Journal of Diversity in Higher Education*, 2011. Vol. 4.2, pg. 120-129. Doi: <https://doi.org/10.1037/a0022953>

WAGES–Academic training worked to help undergrads unlearn unconscious bias behaviors.

"We report experimental evaluation of the Workshop Activity for Gender Equity Simulation in the Academy (WAGES–Academic), a brief, experiential simulation of the cumulative effects of unconscious bias in the academic workplace. We predicted that participants who played WAGES–Academic would demonstrate significantly increased knowledge and retention of gender equity issues in the academic workplace compared with participants in a control condition. Baseline information on general knowledge of workplace gender equity issues was obtained from 1,254 undergraduates. In the second

phase, 144 were randomly assigned to complete either WAGES–Academic or a control task, and the immediate effects of the activities were measured. Participants were contacted 7–11 days later to complete an online measure of knowledge retention. Compared with a control condition, WAGES–Academic increased knowledge and retention. This effect occurred irrespective of prior level of sexist beliefs, participant gender, or whether the participant had been on the advantaged or disadvantaged team. Potential use and testing of WAGES–Academic with university faculty and administrators are discussed.”

### **Steele and Aronson 1995**

[“Stereotype Threat and the Intellectual Test Performance of African Americans”](#). *Journal of Personality and Social Psychology*, 1995. Vol. 69.5, pg. 797-811. Doi: <http://dx.doi.org/10.1037/0022-3514.69.5.797>

Black students will underperform when feeling the pressure of negative stereotypes.

“Stereotype threat is being at risk of confirming, as self-characteristic, a negative stereotype about one’s group. Studies 1 and 2 varied the stereotype vulnerability of Black participants taking a difficult verbal test by varying whether or not their performance was ostensibly diagnostic of ability, and thus, whether or not they were at risk of fulfilling the racial stereotype about their intellectual ability. Reflecting the pressure of this vulnerability, Blacks underperformed in relation to Whites in the ability-diagnostic condition but not in the nondiagnostic condition (with Scholastic Aptitude Tests controlled). Study 3 validated that ability-diagnosticity cognitively activated the racial stereotype in these participants and motivated them not to conform to it, or to be judged by it. Study 4 showed that mere salience of the stereotype could impair Blacks’ performance even when the test was not ability diagnostic. The role of stereotype vulnerability in the standardized test performance of ability-stigmatized groups is discussed.”

### **Steinpreis, Anders, and Ritzke 1999**

[“The Impact of Gender on the Review of the Curricula Vitae of Job Applicants and Tenure Candidates: A National Empirical Study”](#). *Sex Roles*, 1999. Vol. 41 pg. 509-528. Doi: <https://doi.org/10.1023/A:1018839203698>

Gender of names on CVs affects psychology job and tenure applicants

“The purpose of this study was to determine some of the factors that influence outside reviewers and search committee members when they are reviewing curricula vitae, particularly with respect to the gender of the name on the vitae. The participants in this study were 238 male and female academic psychologists who listed a university address in the 1997 Directory of the American Psychological Association. They were each sent one of four versions of a curriculum vitae (i.e., female job applicant, male job applicant, female tenure candidate, and male tenure candidate), along with a questionnaire and a self-addressed stamped envelope. All the curricula vitae actually came from a real-life scientist at two different stages in her career, but the names were changed to traditional male and female names. Although an exclusively between-groups design was used to avoid sparking gender conscious responding, the results indicate that the participants were clearly able to distinguish between the qualifications of the job applicants versus the tenure candidates, as evidenced by suggesting higher



starting salaries, increased likelihood of offering the tenure candidates a job, granting them tenure, and greater respect for their teaching, research, and service records. Both men and women were more likely to vote to hire a male job applicant than a female job applicant with an identical record. Similarly, both sexes reported that the male job applicant had done adequate teaching, research, and service experience compared to the female job applicant with an identical record. In contrast, when men and women examined the highly competitive curriculum vitae of the real-life scientist who had gotten early tenure, they were equally likely to tenure the male and female tenure candidates and there was no difference in their ratings of their teaching, research, and service experience. There was no significant main effect for the quality of the institution or professional rank on selectivity in hiring and tenuring decisions. The results of this study indicate a gender bias for both men and women in preference for male job applicants.”

### **Towers 2008**

[“A Case Study of Gender Bias at the Postdoctoral Level in Physics, and its Resulting Impact on the Academic Career Advancement of Females”](#). 2008. Available from [arXiv.org:0804.2026](#)

Women get only 1/3 of conference presentations even though they are more productive than male counterparts. This also affects career advancement.

“This case study of a typical U.S. particle physics experiment explores the issues of gender bias and how it affects the academic career advancement prospects of women in the field of physics beyond the postdoctoral level; we use public databases to study the career paths of the full cohort of 57 former postdoctoral researchers on the Run II Dzero experiment to examine if males and females were treated in a gender-blind fashion on the experiment. The study finds that the female researchers were on average significantly more productive compared to their male peers, yet were allocated only 1/3 the amount of conference presentations based on their productivity. The study also finds that the dramatic gender bias in allocation of conference presentations appeared to have significant negative impact on the academic career advancement of the females. The author has a PhD in particle physics and worked for six years as a postdoctoral research scientist, five of which were spent collaborating at Fermilab. She is currently completing a graduate degree in statistics.”

### **Trix and Psenka 2003**

[“Exploring the Color of Glass: Letters of Recommendation for Female and Male Medical Faculty”](#). *Discourse Society*. Vol 3.2, pg. 191-220. 2003. Doi: [https://doi.org/10.1177/0957926503014002277](#)

Language of letters of reference for medical faculty differs by gender of the person for whom it is written.

“This study examines over 300 letters of recommendation for medical faculty at a large American medical school in the mid-1990s, using methods from corpus and discourse analysis, with the theoretical perspective of gender schema from cognitive psychology. Letters written for female applicants were found to differ systematically from those written for male applicants in the extremes of length, in the percentages lacking in basic features, in the percentages with doubt raisers (an extended category of



negative language, often associated with apparent commendation), and in frequency of mention of status terms. Further, the most common semantically grouped possessive phrases referring to female and male applicants ('her teaching,' 'his research') reinforce gender schema that tend to portray women as teachers and students, and men as researchers and professionals."

### **Wenneras and Wold 1997**

["Nepotism and sexism in peer-review"](#) *Nature*, 1997. Vol 387.6631, pg. 341-343. Doi: <http://doi.org/10.1038/387341a0>

Gender bias affects post-doctoral fellowships in Sweden. This was a landmark study on unconscious bias.

"Throughout the world, women leave their academic careers to a far greater extent than their male colleagues. In Sweden, for example, women are awarded 44 per cent of biomedical PhDs but hold a mere 25 per cent of the postdoctoral positions. It used to be thought that once there were enough entry-level female scientists, the male domination of the upper echelons of academic research would automatically diminish. But this has not happened in the biomedical field, where disproportionate numbers of men still hold higher academic positions, despite the significant numbers of women who have entered this research field since the 1970s."

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## **Statistical study**

### **Bornmann, Mutz, Daniel 2007**

["Gender differences in grant peer review: A meta-analysis"](#). *Journal of Informetrics*, 2007. Pg. 226-238. Doi: <https://doi.org/10.1016/j.joi.2007.03.001>

Meta-analysis revealing gender bias in grant allocations

"Narrative reviews of peer review research have concluded that there is negligible evidence of gender bias in the awarding of grants based on peer review. Here, we report the findings of a meta-analysis of 21 studies providing, to the contrary, evidence of robust gender differences in grant award procedures. Even though the estimates of the gender effect vary substantially from study to study, the model estimation shows that all in all, among grant applicants men have statistically significant greater odds of receiving grants than women by about 7%."

### **Council of Canadian Academies 2012**

["Strengthening Canada's Research Capacity: The Gender Dimension – The Expert Panel on Women in University Research"](#). 2012.

“Question: What policies and what societal, cultural, and institutional, economic, and/or other relevant factors influence the career trajectory of women researchers in Canadian universities and underlie gender disparities observed in Canadian university researcher’s statistical profile, by discipline area, rank, duty/position/stature, salary, tenure, research funding and or/any other relevant indicators?”

“The major findings from the statistical profile are:

In general, the Canadian profile is similar to that of other economically advanced nations.

Women’s progress in Canadian universities is uneven and dependent on discipline and rank.

The higher the rank, the lower the percentage of women in comparison to men.

The key factors determined by the Panel that impact the career paths of women start early in life with stereotypes that define roles and expectations, followed by a lack of knowledge about requisites for potential career paths, and a lack of role models and mentors. These issues, combined with a rigid tenure track structure, challenges associated with the paid work-family life balance, and the importance of increased support and coordination amongst governments and institutions should be examined if Canada is going to achieve a greater gender balance within academia.”

### **Davenport and Snyder 1995**

[“Who Cites Women? Whom Do Women Cite?: An Exploration of Gender and Scholarly Citation in Sociology”](http://dx.doi.org/10.1108/eb026958). *Journal of Documentation*, 1995. Vol. 51.4, pg. 404-410.  
<http://dx.doi.org/10.1108/eb026958>

Gender bias in sociological citation

“The authors offer a brief analysis of citation practice in twenty-five American sociological journals, in an attempt to explore claims that citation may show gender bias. Their work follows previous surveys of gender and citation and publication in the social sciences which suggest that women perform less well than men in both areas. The findings of this study suggest that there is indeed gender bias in citation in sociology, and the authors offer some hypotheses to explain the phenomenon that might be tested in further research.”

### **Gasser and Shaffer 2014**

[“Career Development of Women in Academia: Traversing the Leaky Pipeline”](#). *The Professional Counselor*, 2014. Vol. 4.4, pg. 332-352.

Model for women’s experiences in academia, specifically to help with counseling

“Women’s experiences in academia are laden with a fundamental set of issues pertaining to gender inequalities. A model reflecting women’s career development and experiences around their academic pipeline (or career in academia) is presented. This model further conveys a new perspective on the experiences of women academicians before, during and after their faculty appointments and can help in career counseling. Specifically, this model provides career counselors with a framework to conceptualize

the concerns of women clients who work in academic environments. Other implications for career counseling as well as limitations and future directions also are discussed.”

### **Jagsi, Guancial, Worobey, Henault, Chang, Starr, Tarbell, and Hylek 2006**

“[The 'Gender Gap' in Authorship of Academic Medical Literature - A 35-Year Perspective](https://doi.org/10.1056/NEJMsa053910)”. *The New England Journal of Medicine*, 2006. Vol. 355, pg. 281-287. Doi: <https://doi.org/10.1056/NEJMsa053910>

Increase in female authors in medical journals, but women are still a minority

#### **“Background**

Participation of women in the medical profession has increased during the past four decades, but issues of concern persist regarding disparities between the sexes in academic medicine. Advancement is largely driven by peer-reviewed original research, so we sought to determine the representation of female physician-investigators among the authors of selected publications during the past 35 years.

#### **Methods**

Original articles from six prominent medical journals — the *New England Journal of Medicine (NEJM)*, the *Journal of the American Medical Association (JAMA)*, the *Annals of Internal Medicine (Ann Intern Med)*, the *Annals of Surgery (Ann Surg)*, *Obstetrics & Gynecology (Obstet Gynecol)*, and the *Journal of Pediatrics (J Pediatr)* — were categorized according to the sex of both the first and the senior (last listed) author. Sex was also determined for the authors of guest editorials in *NEJM* and *JAMA*. Data were collected for the years 1970, 1980, 1990, 2000, and 2004. The analysis was restricted to authors from U.S. institutions holding M.D. degrees.

#### **Results**

The sex was determined for 98.5 percent of the 7249 U.S. authors of original research with M.D. degrees. The proportion of first authors who were women increased from 5.9 percent in 1970 to 29.3 percent in 2004 ( $P<0.001$ ), and the proportion of senior authors who were women increased from 3.7 percent to 19.3 percent ( $P<0.001$ ) during the same period. The proportion of authors who were women increased most sharply in *Obstet Gynecol* (from 6.7 percent of first authors and 6.8 percent of senior authors in 1970 to 40.7 percent of first authors and 28.0 percent of senior authors in 2004) and *J Pediatr* (from 15.0 percent of first authors and 4.3 percent of senior authors in 1970 to 38.9 percent of first authors and 38.0 percent of senior authors in 2004) and remained low in *Ann Surg* (from 2.3 percent of first authors and 0.7 percent of senior authors in 1970 to 16.7 percent of first authors and 6.7 percent of senior authors in 2004). In 2004, 11.4 percent of the authors of guest editorials in *NEJM* and 18.8 percent of the authors of guest editorials in *JAMA* were women.

#### **Conclusions**

Over the past four decades, the proportion of women among both first and senior physician-authors of original research in the United States has significantly increased. Nevertheless, women still compose a minority of the authors of original research and guest editorials in the journals studied.”

**Jones, Fanson, Lanfear, Symonds, and Higgie 2014**

[“Gender differences in conference presentations: a consequence of self-selection?”](https://doi.org/10.7717/peerj.627) *PeerJ*, 2014. Doi: <https://doi.org/10.7717/peerj.627>

Conference presentations demonstrate the impacts of gender bias and visibility in evolutionary biology.

“Women continue to be under-represented in the sciences, with their representation declining at each progressive academic level. These differences persist despite long-running policies to ameliorate gender inequity. We compared gender differences in exposure and visibility at an evolutionary biology conference for attendees at two different academic levels: student and post-PhD academic. Despite there being almost exactly a 1:1 ratio of women and men attending the conference, we found that when considering only those who presented talks, women spoke for far less time than men of an equivalent academic level: on average student women presented for 23% less time than student men, and academic women presented for 17% less time than academic men. We conducted more detailed analyses to tease apart whether this gender difference was caused by decisions made by the attendees or through bias in evaluation of the abstracts. At both academic levels, women and men were equally likely to request a presentation. However, women were more likely than men to prefer a short talk, regardless of academic level. We discuss potential underlying reasons for this gender bias, and provide recommendations to avoid similar gender biases at future conferences.”

**Knobloch-Westerwick and Glynn 2013**

[“The Matilda Effect – Role Congruity Effects on Scholarly Communication: A Citation Analysis of Communication Research and Journal of Communication Articles”](https://doi.org/10.1177/0093650211418339). *Communication Research*, 2013. Vol. 40.1, pg. 3-26. Doi: <https://doi.org/10.1177/0093650211418339>

Male communication scientists receive more citations than female scientists.

“Using role congruity theory as the basis for the study, an analysis of 1,020 articles published 1991-2005 in *Communication Research* and *Journal of Communication*, as well as the ISI citations these articles received and the citations these articles included, was conducted. In line with a hypothesized “Matilda effect” (underrecognition of female scientists), articles authored by female communication scientists received fewer citations than articles authored by males. Hypotheses on moderating impacts of research topic, author productivity, and citing author’s sex, as well as on change in the effect’s extent across time were derived from the theoretical framework. Networking conceptualizations led to an additional hypothesis. Five of six hypotheses were supported.”

**Kretschmer, Kundra, deB. Beaver, and Kretschmer 2012**

[“Gender bias in journals of gender studies”](https://doi.org/10.1007/s11192-012-0661-5). *Scientometrics*, 2012. Vol 93.1, pg.135–150. Doi: <https://doi.org/10.1007/s11192-012-0661-5>

Gender bias changes by discipline: there is less bias against female authors in gender studies publications.

“The causes of gender bias favoring men in scientific and scholarly systems are complex and related to overall gender relationships in most of the countries of the world. An as yet unanswered question is whether in research publication gender bias is equally distributed over scientific disciplines and fields or if that bias reflects a closer relation to the subject matter. We expected less gender bias with respect to subject matter, and so analysed 14 journals of gender studies using several methods and indicators. The results confirm our expectation: the very high position of women in co-operation is striking; female scientists are relatively overrepresented as first authors in articles. Collaboration behaviour in gender studies differs from that of authors in PNAS. The pattern of gender studies reflects associations between authors of different productivity, or “masters” and “apprentices” but the PNAS pattern reflects associations between authors of roughly the same productivity, or “peers”. It would be interesting to extend the analysis of these three-dimensional collaboration patterns further, to see whether a similar characterization holds, what it might imply about the patterns of authorship in different areas, what those patterns might imply about the role of collaboration, and whether there are differences between females and males in collaboration patterns.”

#### **Ledin, Bornmann, Gannon, and Wallon 2007**

“[A persistent problem: Traditional gender roles hold back female scientists](#)”. *European Molecular Biology Organization Reports*, 2007. Vol 8.11, pg. 982 -987. Doi: <https://doi.org/10.1038/sj.embor.7401109>

Gender’s influence on various parts of a scientist’s career

The researchers examined the success rate of female applicants who apply for the European Molecular Biology Organization's (EMBO) Long-Term Fellowships (LTFs) and the Young Investigator Programme (YIP), which is typically lower than the rate for male applicants. They investigated different factors which could result in this bias, including names on applications, language of CVs, and bibliometric data. They found that women typically have a lower publication rate. Finally, they investigate the possible causes for lower productivity, which can include social factors such as family. They conclude that a number of factors combine to affect women’s success rate.

#### **Lincoln, Pincus, Koster, and Leboy 2012**

“[The Matilda Effect in science: Awards and prizes in the US, 1990s and 2000s](#)”. *Social Studies of Science*, 2012. Vol. 42.2, pg. 307-320. Doi: <https://doi.org/10.1177/0306312711435830>

Women continue to receive less recognition than men in the sciences; one example of this is in awards allocated.

“Science is stratified, with an unequal distribution of research facilities and rewards among scientists. Awards and prizes, which are critical for shaping scientific career trajectories, play a role in this stratification when they differentially enhance the status of scientists who already have large reputations: the ‘Matthew Effect’. Contrary to the Mertonian norm of universalism – the expectation that the personal attributes of scientists do not affect evaluations of their scientific claims and contributions – in practice, a great deal of evidence suggests that the scientific efforts and achievements

of women do not receive the same recognition as do those of men: the 'Matilda Effect'. Awards in science, technology, engineering and medical (STEM) fields are not immune to these biases. We outline the research on gender bias in evaluations of research and analyze data from 13 STEM disciplinary societies. While women's receipt of professional awards and prizes has increased in the past two decades, men continue to win a higher proportion of awards for scholarly research than expected based on their representation in the nomination pool. The results support the powerful twin influences of implicit bias and committee chairs as contributing factors. The analysis sheds light on the relationship of external social factors to women's science careers and helps to explain why women are severely underrepresented as winners of science awards. The ghettoization of women's accomplishments into a category of 'women-only' awards also is discussed."

#### **Lutz 1990**

["the erasure of women's writing in sociocultural anthropology"](#) *Journal of the American Ethnological Society*, 1990. Vol. 17.4, pg. 611-627. Doi: <https://doi.org/10.1525/ae.1990.17.4.02a00010>

Female authors are cited less frequently in sociology than male authors.

"Writing, citation, and other canon-setting patterns in the recent (1977–86) literature of sociocultural anthropology reveal the impact of gender relations. In this article, citation is treated as a social practice which, among other things, legitimizes the voice of the cited author. While women produce a substantial proportion of the work available for citation, the proportion of women authors cited is lower than would be expected on that basis, and it varies with the citing author's gender. Annual meetings programs also show a tendency for women to be extremely active, but the frequent focus on gender and feminism is not reflected in overviews of the field. Conclusions are drawn about the relative marginalization of women's work and about the relationship between the warranting of women's academic work and the public or private context of its evaluation."

#### **RAND 2005**

["Is There Gender Bias in Federal Grant Programs?"](#). *RAND Infrastructure, Safety, and Environment Research Brief*, 2005. RB-9147-NSF

Federal Grant agencies tend not to have gender differences in allocation except at NIH and with subsequent application rates.

"Based on analysis of three federal agency databases and two researcher surveys, we did not find gender differences in federal grant funding outcomes, with two exceptions. First, we found a gender gap in the amount of funding on average that females receive relative to their male counterparts at NIH, although important caveats are associated with that finding. Second, we found a gender gap in subsequent application rates. Suggestions for future data gathering and analysis are discussed."

#### **Stack 2002**

[“Gender and Scholarly Productivity: The case of criminal justice”](#). *Journal of Criminal Justice*, 2002. Vol. 30, pg. 175-182. Doi: [http://dx.doi.org/10.1016/S0047-2352\(01\)00134-9](http://dx.doi.org/10.1016/S0047-2352(01)00134-9)

Factors limiting female publishing in the field of criminal justice

“Research on scholarly productivity in science has consistently found that women scientists publish only 50–60 percent as many scholarly papers as men. Common limitations of this work include a focus on the hard sciences to the neglect of other fields and lack of controls for type of location or employment. This study contributed to the literature by investigating a soft science (criminal justice) and focusing on a particular location: scientists in tenure track, academic positions. Further, it was contended that females were more integrated into the male research networks in criminal justice than in the hard sciences. This greater integration should narrow the gap between male and female productivity. Data were based on eighty-nine faculty in Master's-level criminal justice departments. The results of a multiple regression analysis indicated that gender was not significantly associated with either the number of articles or the impact (citations) of scholarly work. The leading predictors of scholarly productivity included faculty rank and year of PhD. The full model explained 37 percent of the variance in article production and 44 percent of the variance in scholarly impact.”

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## Literature Review/Research Compilation

### Corrice 2009

[“Unconscious bias in faculty and leadership recruitment: A literature review”](#) *Association of American Medical Colleges Analysis in Brief*, 2009. Vol. 9.2.

“Although women and minorities have made significant strides in achieving equality in the workplace, they are still underrepresented in the upper strata of organizations, including senior faculty and leadership positions at medical schools and teaching hospitals. Within the last decade, social science researchers have pursued the theory of “unconscious bias” as one barrier to workplace equality that may persist despite a general commitment to increase diversity across the academic medicine workforce and other organizations. This Analysis in Brief reviews the scientific literature on the theory of unconscious bias, explores the role of unconscious bias in job recruitment and evaluations, and offers suggestions for search committees and others involved in hiring decisions at medical schools and teaching hospitals.”

### Easterly and Ricard 2011

[“Conscious Efforts to End Unconscious Bias: Why Women Leave Academic Research”](#). *Journal of research Administration*, 2011.

Women leave academic research because of unconscious bias

“Issues surrounding gender discrimination have been addressed over the past 40 years with various pieces of legislation and federal policies that have made such discrimination illegal. The number of women in higher education as students and faculty has steadily increased since the 1950s, though only in certain disciplines and in the lower faculty ranks, especially in many of the STEM disciplines (defined by the National Science Foundation as Biological Sciences; Computer and Information Science and Engineering; Engineering; Geosciences; Mathematics and Physical Sciences; Social, Behavioral and Economic Sciences; and Education and Human Resources). Why is this? This article reviews the literature regarding one possible reason for this exception: unconscious bias or gender schemas. Possible solutions are presented that can help overcome the bias experienced and perceived by female faculty in institutions of higher education in the United States.”

#### **Gasser and Shaffer 2014**

“[Career Development of Women in Academia: Traversing the Leaky Pipeline](#)”. *The Professional Counselor*, 2014. Vol. 4.4, pg. 332-352.

Model for women’s experiences in academia, specifically to help with counseling

“Women’s experiences in academia are laden with a fundamental set of issues pertaining to gender inequalities. A model reflecting women’s career development and experiences around their academic pipeline (or career in academia) is presented. This model further conveys a new perspective on the experiences of women academicians before, during and after their faculty appointments and can help in career counseling. Specifically, this model provides career counselors with a framework to conceptualize the concerns of women clients who work in academic environments. Other implications for career counseling as well as limitations and future directions also are discussed.”

#### **Isaac, Lee, and Carnes 2009**

“[Interventions that affect gender bias in hiring: A systematic review](#)”. *Academic Medicine*, 2009. Vol. 84 pg. 1440–1446. Doi: <https://doi.org/10.1097/ACM.0b013e3181b6ba00>

Literature review shows negative bias against women for academic medical jobs, but there are ways to mitigate this.

“To systematically review experimental evidence for interventions mitigating gender bias in employment. Unconscious endorsement of gender stereotypes can undermine academic medicine's commitment to gender equity. The authors performed electronic and hand searches for randomized controlled studies since 1973 of interventions that affect gender differences in evaluation of job applicants. Twenty-seven studies met all inclusion criteria. Interventions fell into three categories: application information, applicant features, and rating conditions. The studies identified gender bias as the difference in ratings or perceptions of men and women with identical qualifications. Studies reaffirmed negative bias against women being evaluated for positions traditionally or predominantly held by men (male sex-typed jobs). The assessments of male and female raters rarely differed. Interventions that provided raters with clear evidence of job-relevant competencies were effective. However, clearly competent women were rated lower than equivalent men for male sex-typed jobs



unless evidence of communal qualities was also provided. A commitment to the value of credentials before review of applicants and women's presence at above 25% of the applicant pool eliminated bias against women. Two studies found unconscious resistance to "antibias" training, which could be overcome with distraction or an intervening task. Explicit employment equity policies and an attractive appearance benefited men more than women, whereas repeated employment gaps were more detrimental to men. Masculine-scented perfume favored the hiring of both sexes. Negative bias occurred against women who expressed anger or who were perceived as self-promoting. High-level evidence exists for strategies to mitigate gender bias in hiring."

### **Marsh, Jayasinghe, and Bond 2008**

["Improving the Peer-Review Process for Grant Applications: Reliability, Validity, Bias, and Generalizability"](#). *American Psychologist*, 2008. Vol. 63.3, pg. 160-168. Doi: <http://dx.doi.org/10.1037/0003-066X.63.3.160>

Peer-review is a flawed process, and the "reader system" is more reliable.

"Peer review is a gatekeeper, the final arbiter of what is valued in academia, but it has been criticized in relation to traditional psychological research criteria of reliability, validity, generalizability, and potential biases. Despite a considerable literature, there is surprisingly little sound peer-review research examining these criteria or strategies for improving the process. This article summarizes the authors' research program with the Australian Research Council, which receives thousands of grant proposals from the social science, humanities, and science disciplines and reviews by assessors from all over the world. Using multilevel cross-classified models, the authors critically evaluated peer reviews of grant applications and potential biases associated with applicants, assessors, and their interaction (e.g., age, gender, university, academic rank, research team composition, nationality, experience). Peer reviews lacked reliability, but the only major systematic bias found involved the inflated, unreliable, and invalid ratings of assessors nominated by the applicants themselves. The authors propose a new approach, the reader system, which they evaluated with psychology and education grant proposals and found to be substantially more reliable and strategically advantageous than traditional peer reviews of grant applications."

### **McElhinny, Hols, Holtzkenner, Unger, and Hicks 2003**

["Gender, publication and citation in sociolinguistics and linguistic anthropology: The construction of a scholarly canon"](#) *Language in Society*, 2003. Vol. 32.3, pg. 299-328. Doi: <http://dx.doi.org/10.1017/S0047404503323012>

Lower rate of publication for female authors in sociolinguistics and linguistic anthropology

"Feminist scholars have begun to ask how existing conceptual schemes and organizational structures in academic disciplines have excluded women and feminist ideas, and to provide suggestions for transformation. One strand of this work has been the exploration of how canons of thought are constructed in such fields as economics, sociology, and sociocultural anthropology. This article begins such an investigation for sociolinguistics and linguistic anthropology by reviewing how gender correlates

with publication and citation over a 35-year period (1965–2000) in five key journals, and in 16 textbooks published in the 1990s. It describes some marked differences in the publication of works by women and on gender in the five journals, as well as some significant differences in the degree to which men and women cite the work of women. It also considers how the rate of publication of articles on sex, gender, and women is correlated with publication of female authors. It concludes with a discussion of the implications of this study for changing institutional practices in our field.”

### **Shen 2013**

“[Inequality quantified: Mind the gender gap](#)”. *Nature*, 2013. Vol. 495, pg. 22-24. Doi: <https://doi.org/10.1038/495022a>

Gender gap in the sciences

“Female scientists have made steady gains in recent decades but they face persistent career challenges. US universities and colleges employ far more male scientists than female ones and men earn significantly more in science occupations.”

### **Valian 2005**

“[Beyond Gender Schemas: Improving the Advancement of Women in Academia](#)”. *Hypatia: A Journal of Feminist Philosophy*, 2005. Vol. 20.3, pg. 198-213. Doi: <https://doi.org/10.1111/j.1527-2001.2005.tb00495.x>

How to advance women in academia

The author describes the discrepancy in experiences based on gender, examining the experimental data of various studies. She describes the cumulative impact of these experiences, as well as their impact on self-perception. Finally, she discusses why gender equity is important and how one can increase it.

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## **Article/Essay**

### **England 2010**

“[The Gender Revolution: Uneven and Stalled](#)”. *Sociologists for Women in Society Feminist Lecture in Gender and Society*, 2010. Vol. 24.2, pg. 149-166. Doi: <https://doi.org/10.1177/0891243210361475>

Why some women have taken “male” jobs, but males have not taken “female” jobs

“In this article, the author describes sweeping changes in the gender system and offers explanations for why change has been uneven. Because the devaluation of activities done by women has changed little, women have had strong incentive to enter male jobs, but men have had little incentive to take on

female activities or jobs. The gender egalitarianism that gained traction was the notion that women should have access to upward mobility and to all areas of schooling and jobs. But persistent gender essentialism means that most people follow gender-typical paths except when upward mobility is impossible otherwise. Middle-class women entered managerial and professional jobs more than working-class women integrated blue-collar jobs because the latter were able to move up while choosing a “female” occupation; many mothers of middle-class women were already in the highest-status female occupations. The author also notes a number of gender-egalitarian trends that have stalled.”

### **Kattari 2015**

[“Examining Ableism in Higher Education through Social Dominance Theory and Social Learning Theory”](#). *Innovative Higher Education*, 2015. Vol. 40, pg. 375-386. Doi: <https://doi.org/10.1007/s10755-015-9320-0>

Examining the need for different interactions and ally behavior between able-bodied professors and students with disabilities

“In most societies, some social identity groups hold a disproportionate amount of social, cultural, and economic power, while other groups hold little. In contemporary U.S. society, examples of this power are evident around issues of ability/disability, with able-bodied individuals wielding social dominance and people with disabilities experiencing a lack of social, cultural, and economic power. However, this relationship between able-bodied individuals and people with disabilities is neither static nor determinant; and through social modeling it may be altered to foster increased positive outcomes for people with disabilities, including both undergraduate and graduate students. As educators and institutional staff members frequently engage with students with disabilities, improving ally behavior and overall accessibility will increase rapport building with students, leading to more just and equitable interactions.”

### **Rossiter 1993**

[“The Matthew Matilda Effect in Science”](#). *Social Studies of Science*, 1993. Vol. 23.2, pg. 325-341. Doi: <https://doi.org/10.1177/030631293023002004>

A discussion of the “Matilda Effect” on women, building off the concept of the “Matthew Effect,” which describes how people who have little to start with are more likely to be under-recognized

“Recent work has brought to light so many cases, historical and contemporary, of women scientists who have been ignored, denied credit or otherwise dropped from sight that a sex-linked phenomenon seems to exist, as has been documented to be the case in other fields, such as medicine, art history and literary criticism. Since this systematic bias in scientific information and recognition practices fits the second half of Matthew 13:12 in the Bible, which refers to the under-recognition accorded to those who have little to start with, it is suggested that sociologists of science and knowledge can add to the 'Matthew Effect', made famous by Robert K. Merton in 1968, the 'Matilda Effect', named for the American suffragist and feminist critic Matilda J. Gage of New York, who in the late nineteenth century both experienced and

articulated this phenomenon. Calling attention to her and this age-old tendency may prod future scholars to include other such 'Matildas' and thus to write a better, because more comprehensive, history and sociology of science."

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## Record of Experiences

### Miller 2016

“‘White sanction’, institutional, group and individual interaction in the promotion and progression of black and minority ethnic academics and teachers in England”. *Power and Education*, 2016. Pg. 1-17. Doi: <https://doi.org/10.1177/1757743816672880>

Black and minority ethnic experiences in academia, and the perceived need for “white sanction”

“The promotion and progression of black and minority ethnic academics and teachers in England has been the subject of much debate. Although several theories have been put forward, racial equality has stood out as a major contributing factor. The experiences of black and minority ethnic academics and teachers in England are similar in terms of aspirations, and their experience of organisations also points to similar patterns of exclusions. This integrated study provides thick data from qualitative interviews with academics and teachers, theorised through the lens of whiteness theory and social identity theory, of their experience of promotion and progression, how they feel organisations respond to them and how they, in turn, are responding to promotion and progression challenges. There was a shared view amongst the participants that, for black and minority ethnic academics and teachers to progress in England, they need ‘white sanction’ – a form of endorsement from white colleagues that in itself has an enabling power.”

### Monzo and SooHoo 2014

“[Translating the Academy: Learning the Racialized Languages of Academia](#)”. *Journal of Diversity in Higher Education*, 2014. Vol. 7.3, pg. 147-165. Doi: <http://dx.doi.org/10.1037/a0037400>

Experiences of two women of color in academia

“This article presents narratives of 2 women faculty of color, 1 early career Latina and the other tenured Asian American woman, regarding their ontological and epistemological struggles in academia, as well as the hope, impetus, and strategies for change that they constructed together. Drawing on a critical pedagogy perspective, mentoring is discussed as a praxis of allyship that develops organically within relationships that recognize each person’s strengths, provides instrumental knowledge about the academy, provides intellectual stimulation and reciprocal reflection, and is a collaborative endeavor that helps them to resist erasure and insert visibly diverse knowledge systems into people’s academic pursuits and responsibilities.”

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## 2. General Workforce

### Subject

#### Hiring

##### **Bertrand and Mullainathan 2003**

["Are Emily and Greg more employable than Lakisha and Jamal? A field experiment on labor market discrimination"](#). *American Economic Review*, 2004. Vol 94.4, pg. 991-1013. Doi: <http://doi.org/10.1257/0002828042002561>

People with "White" names are more likely to be hired than those with "Black" names.

"We study race in the labor market by sending fictitious resumes to help-wanted ads in Boston and Chicago newspapers. To manipulate perceived race, resumes are randomly assigned African-American- or White-sounding names. White names receive 50 percent more callbacks for interviews. Callbacks are also more responsive to resume quality for White names than for African-American ones. The racial gap is uniform across occupation, industry, and employer size. We also find little evidence that employers are inferring social class from the names. Differential treatment by race still appears to still be prominent in the U. S. labor market."

##### **Booth, Leigh, and Varganova 2010**

["Does Racial and Ethnic Discrimination Vary Across Minority Groups? Evidence from a Field Experiment"](#). *Oxford Bulletin of Economics and Statistics*, 2010. Vol. 74, pg. 547-573 Doi: <http://dx.doi.org/10.1111/j.1468-0084.2011.00664.x>

Different minorities have unequal hiring rates based on names on applications.

"We conduct a large-scale audit discrimination study to measure labor market discrimination across different minority groups in Australia - a country where one quarter of the population was born overseas. To denote ethnicity, we use distinctively Anglo-Saxon, Indigenous, Italian, Chinese, and Middle Eastern names, and our goal is a comparison across multiple ethnic groups rather than focusing on a single minority as in most other studies. In all cases, we applied for entry-level jobs and submitted a CV showing that the candidate had attended high school in Australia. We find economically and statistically significant differences in callback rates, suggesting that ethnic minority candidates would need to apply for more jobs in order to receive the same number of interviews. These differences vary systematically across groups, with Italians (a more established migrant group) suffering less discrimination than

Chinese and Middle Easterners (who have typically arrived more recently). We also explore various explanations for our empirical findings.”

### **Carlsson and Rooth 2007**

“[Evidence of ethnic discrimination in the Swedish labor market using experimental data](#)”. *Labour Economics*, 2007. Vol. 14.4, pg. 716-729. Doi: <http://dx.doi.org/10.1016/j.labeco.2007.05.001>

Different minorities have unequal hiring rates based on names on applications.

“We present evidence of ethnic discrimination in the recruitment process by sending fictitious applications to real job openings. Applications with identical skills were randomly assigned Middle Eastern- or Swedish-sounding names and applications with a Swedish name receive fifty percent more callbacks for an interview.

We extend previous analyses by adding register and interview information on firms/recruiters to the experimental data. We find that male recruiters and workplaces with fewer than twenty employees less often call applications with a Middle Eastern name for an interview.”

### **Catalyst 2007**

“[The Double-Bind Dilemma for Women in Leadership: Damned if You Do, Doomed if you Don’t](#)”. *Catalyst*, 2007. New York, NY. Available from <http://www.catalyst.org/knowledge/double-bind>.

Report on how gender stereotypes affect female leaders

“This report analyzes open-ended answers to survey questions as well as one-on-one interviews to reveal that gender stereotypes can create several predicaments for women leaders. Because they are often evaluated against a “masculine” standard of leadership, women are left with limited and unfavorable options, no matter how they behave and perform as leaders. In particular, three predicaments put women in a double bind and can potentially undermine their leadership as well as their own advancement options:

1. Extreme Perceptions: Women are perceived as too soft or too tough but never just right.
2. The High Competence Threshold: Women leaders face higher standards and lower rewards than men leaders.
3. Competent but Disliked: Women leaders are perceived as competent or liked, but rarely both.”

### **Collins 2007**

“[Tackling Unconscious Bias in Hiring Practices: The Plight of the Rooney Rule](#)”. *New York University Law Review*, 2007. Vol. 82, pg. 870-912.

Rule requiring all job searches for NFL head coaches to include at least one person of color is successful in increasing the number of head coaches of color.

“This Note analyzes the National Football League’s (NFL) 2002 decision to implement an innovative—and controversial—policy aimed at increasing the League’s number of minority head coaches. Designated the “Rooney Rule,” the policy mandates that every NFL team interview at least one minority candidate upon the vacancy of a head coaching position or be subjected to a significant monetary fine. Despite ongoing allegations that it promotes tokenism and is a form of reverse discrimination, the Rule has reached uncharted success. While other professional sports with large minority populations (e.g., the National Basketball Association) have succeeded in integrating their head coaching positions over the past twenty years without analogous action, this Note argues that the pre–Rooney Rule NFL hiring process remained relatively static because decisionmakers unwittingly held (and often still hold) archaic biases regarding the intellectual ability of minority candidates to handle the high degree of organizational complexity in football. By deftly traversing the line between “soft” and “hard” variants of affirmative action, the Rule has proven effective because it forces decisionmakers harboring this unconscious bias to expand previously restricted coaching networks and come face-to-face with a candidate they would never have considered otherwise.”

#### **Correll, Benard, and Paik 2007**

“[Getting a Job: Is There a Motherhood Penalty?](#)” *American Journal of Sociology*, 2007. Vol. 112 pg. 1297-1338. Doi: <https://doi.org/10.1086/511799>

Female employees are penalized for parenting, but men may benefit from it.

“Survey research finds that mothers suffer a substantial wage penalty, although the causal mechanism producing it remains elusive. The authors employed a laboratory experiment to evaluate the hypothesis that status-based discrimination plays an important role and an audit study of actual employers to assess its real-world implications. In both studies, participants evaluated application materials for a pair of same-gender equally qualified job candidates who differed on parental status. The laboratory experiment found that mothers were penalized on a host of measures, including perceived competence and recommended starting salary. Men were not penalized for, and sometimes benefited from, being a parent. The audit study showed that actual employers discriminate against mothers, but not against fathers.”

#### **Daguid and Thomas-Hunt 2015**

“[Condoning Stereotyping? How Awareness of Stereotyping Prevalence Impacts Expression of Stereotypes](#)”. *Journal of Applied Psychology*, 2015. Vol. 100.2, pg. 343-339. Doi: <https://doi.org/10.1037/a0037908>

Increased awareness of stereotyping can lead to increased stereotyping behaviors.

“The deleterious effects of stereotyping on individual and group outcomes have prompted a search for solutions. One approach has been to increase awareness of the prevalence of stereotyping in the hope

of motivating individuals to resist natural inclinations. However, it could be that this strategy creates a norm for stereotyping, which paradoxically undermines desired effects. The present research demonstrates that individuals who received a high prevalence of stereotyping message expressed more stereotypes than those who received a low prevalence of stereotyping message (Studies 1a, 1b, 1c, and 2) or no message (Study 2). Furthermore, working professionals who received a high prevalence of stereotyping message were less willing to work with an individual who violated stereotypical norms than those who received no message, a low prevalence of stereotyping message, or a high prevalence of counter-stereotyping effort message (Study 3). Also, in a competitive task, individuals who received a high prevalence of stereotyping message treated their opponents in more stereotype-consistent ways than those who received a low prevalence of stereotyping message or those who received a high prevalence of counter-stereotyping effort message (Study 4)."

### England 2010

["The Gender Revolution: Uneven and Stalled"](#). (Sociologists for Women in Society Feminist Lecture) *Gender and Society*, 2010. Vol. 24.2, pg. 149-166. Doi: <https://doi.org/10.1177/0891243210361475>

Why some women have taken jobs traditionally associated with men, but men have not done the reverse

"In this article, the author describes sweeping changes in the gender system and offers explanations for why change has been uneven. Because the devaluation of activities done by women has changed little, women have had strong incentive to enter male jobs, but men have had little incentive to take on female activities or jobs. The gender egalitarianism that gained traction was the notion that women should have access to upward mobility and to all areas of schooling and jobs. But persistent gender essentialism means that most people follow gender-typical paths except when upward mobility is impossible otherwise. Middle-class women entered managerial and professional jobs more than working-class women integrated blue-collar jobs because the latter were able to move up while choosing a "female" occupation; many mothers of middle-class women were already in the highest-status female occupations. The author also notes a number of gender-egalitarian trends that have stalled."

### Goldin and Rouse 2000

["Orchestrating Impartiality: The Impact of 'Blind' Auditions on Female Musicians"](#). *American Economic Review*, 2000. Vol. 90.4, pg. 715-741.

"Blind" auditions increase number of women hired for orchestras.

"A change in the audition procedures of symphony orchestras--adoption of "blind" auditions with a "screen" to conceal the candidate's identity from the jury--provides a test for sex-biased hiring. Using data from actual auditions, in an individual fixed-effects framework, we find that the screen increases the probability a woman will be advanced and hired. Although some of our estimates have large standard errors and there is one persistent effect in the opposite direction, the weight of the evidence



suggests that the blind audition procedure fostered impartiality in hiring and increased the proportion women in symphony orchestras.”

### **Heilman and Okimoto 2007**

“[Why are women penalized for success at male tasks?: the implied communality deficit](#)”. *Journal of Applied Psychology*, 2007. Vol 92.1, pgs. 81-92. Doi: <https://doi.org/10.1037/0021-9010.92.1.81>

Women are penalized for succeeding in “male domains” because they are seen as violating gender norms.

“In 3 experimental studies, the authors tested the idea that penalties women incur for success in traditionally male areas arise from a perceived deficit in nurturing and socially sensitive communal attributes that is implied by their success. The authors therefore expected that providing information of communality would prevent these penalties. Results indicated that the negativity directed at successful female managers-in ratings of likability, interpersonal hostility, and boss desirability-was mitigated when there was indication that they were communal. This ameliorative effect occurred only when the information was clearly indicative of communal attributes (Study 1) and when it could be unambiguously attributed to the female manager (Study 2); furthermore, these penalties were averted when communality was conveyed by role information (motherhood status) or by behavior (Study 3). These findings support the idea that penalties for women's success in male domains result from the perceived violation of gender-stereotypic prescriptions.”

### **Phelan, Moss-Racusin, and Rudman 2008**

“[Competent Yet Out in the Cold: Shifting Criteria for Hiring Reflect Backlash Toward Agentic Women](#)”. *Psychology of Women Quarterly*, 2008. Vol. 32.4, pg. 406-413. Doi: <https://doi.org/10.1111/j.1471-6402.2008.00454.x>

Bias in hiring against women with agency

“We present evidence that shifting hiring criteria reflects backlash toward agentic (“masterful”) women (Rudman, 1998). Participants (N = 428) evaluated male or female agentic or communal managerial applicants on dimensions of competence, social skills, and hireability. Consistent with past research, agentic women were perceived as highly competent but deficient in social skills, compared with agentic men. New to the present research, social skills predicted hiring decisions more than competence for agentic women; for all other applicants, competence received more weight than social skills. Thus, evaluators shifted the job criteria away from agentic women's strong suit (competence) and toward their perceived deficit (social skills) to justify hiring discrimination. The implications of these findings for women's professional success are discussed.”

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## Wage Gap

### Budig and England 2001

[“The Wage Penalty for Motherhood”](#). *American Sociological Review*, 2001. Vol 66, pg. 204-225.

Women with children are paid less than other employees.

“Motherhood is associated with lower hourly pay, but the causes of this are not well understood. Mothers may earn less than other women because having children causes them to (1) lose job experience, (2) be less productive at work, (3) trade off higher wages for mother-friendly jobs, or (4) be discriminated against by employers. Or the relationship may be spurious rather than causal—women with lower earning potential may have children at relatively higher rates. The authors use data from the 1982–1993 National Longitudinal Survey of Youth with fixed-effects models to examine the wage penalty for motherhood. Results show a wage penalty of 7 percent per child. Penalties are larger for married women than for unmarried women. Women with (more) children have fewer years of job experience, and after controlling for experience a penalty of 5 percent per child remains. “Mother-friendly” characteristics of the jobs held by mothers explain little of the penalty beyond the tendency of more mothers than non-mothers to work part-time. The portion of the motherhood penalty unexplained probably results from the effect of motherhood on productivity and/or from discrimination by employers against mothers. While the benefits of mothering diffuse widely—to the employers, neighbors, friends, spouses, and children of the adults who received the mothering—the costs of child rearing are borne disproportionately by mothers.”

### Cha and Weeden 2014

[“Overwork and the Slow Convergence in the Gender Gap in Wages”](#). *American Sociological Review*, 2014. Vol. 79.3, pg. 457-484. Doi: <https://doi.org/10.1177/0003122414528936>

Pay from overtime has increased the gender pay gap.

“Despite rapid changes in women’s educational attainment and continuous labor force experience, convergence in the gender gap in wages slowed in the 1990s and stalled in the 2000s. Using CPS data from 1979 to 2009, we show that convergence in the gender gap in hourly pay over these three decades was attenuated by the increasing prevalence of “overwork” (defined as working 50 or more hours per week) and the rising hourly wage returns to overwork. Because a greater proportion of men engage in overwork, these changes raised men’s wages relative to women’s and exacerbated the gender wage gap by an estimated 10 percent of the total wage gap. This overwork effect was sufficiently large to offset the wage-equalizing effects of the narrowing gender gap in educational attainment and other forms of human capital. The overwork effect on trends in the gender gap in wages was most pronounced in professional and managerial occupations, where long work hours are especially common and the norm of overwork is deeply embedded in organizational practices and occupational cultures. These results illustrate how new ways of organizing work can perpetuate old forms of gender inequality.”

### Levanon, England, and Allison 2009

[“Occupational Feminization and Pay: Assessing Causal Dynamics Using 1950-2000 U.S. Census Data”](#). *Social Forces* (The University of North Carolina Press), 2009. Vol. 88.2, pg. 865-892. Doi: <https://doi.org/10.1353/sof.0.0264>

Occupations with a greater number of female employees pay less than others due to devaluation of the labor.

“Occupations with a greater share of females pay less than those with a lower share, controlling for education and skill. This association is explained by two dominant views: devaluation and queuing. The former views the pay offered in an occupation to affect its female proportion, due to employers' preference for men—a gendered labor queue. The latter argues that the proportion of females in an occupation affects pay, owing to devaluation of work done by women. Only a few past studies used longitudinal data, which is needed to test the theories. We use fixed-effects models, thus controlling for stable characteristics of occupations, and U.S. Census data from 1950 through 2000. We find substantial evidence for the devaluation view, but only scant evidence for the queuing view.”

#### **O'Reilly, Smith, Deakin, and Burchell 2015**

[“Equal Pay as a Moving Target: International perspectives on forty-years of addressing the gender pay gap”](#). *Cambridge Journal of Economics*, 2015. Vol. 39.2, pg. 299-317. Doi: <https://doi.org/10.1093/cje/bev010>

Discussing the gender pay gap in the UK, Europe, and Australia

“This paper provides an overview of the key factors impacting upon the gender pay gap in the UK, Europe and Australia. Forty years after the implementation of the first equal pay legislation, the pay gap remains a key aspect of the inequalities women face in the labour market. While the overall pay gap has tended to fall in many countries over the past forty years, it has not closed; in some countries it has been stubbornly resistant, or has even widened. In reviewing the collection of papers that make up this special issue we identify four broad themes with which to group the contributions and draw out the explanations for diverse trends: theoretical and conceptual debates; legal developments and their impacts; wage setting institutions and changing employer demands; and newly emerging pay inequalities between and within educational and ethnic groups. Across the four themes we underline how the trends in the gender pay gap capture the dynamism of inequalities, as the market power of different groups and stakeholders changes over times. Three key dimensions emerge from the papers to provide a framework for future research and policy discourse: the relationship between litigation and bargaining strategies; the interaction between wage-setting institutions and new organisational practices; and the increasing and range of diversity or equality strands competing for equal treatment. We conclude that progress towards closing the gender pay gap will not be easy, will require a collective effort of various actors, and will not be quick.”

#### **Rubery and Grimshaw 2014**

[“The 40-year pursuit of equal pay: a case of constantly moving goalposts”](#). *Cambridge Journal of Economics*, 2014. Vol. 39.2, pg. 319-343. Doi: <https://doi.org/10.1093/cje/beu053>

Investigation of different techniques for solving the gender pay gap and why the gap persists despite these efforts

“Progress towards equal pay is elusive. This article reviews debates on and prescribed remedies for gender pay equality over the past 40 years of equal pay policy. It looks at pay from four perspectives—the economic, the sociological, the institutional and the organisational—and explores how and why once an apparent remedy for unequal pay is pursued, the goalposts tend to shift. The argument is made that the difficulties in securing long-term progress may be attributed to a number of factors, including the multifaceted nature of pay as a social phenomenon, the challenge of pursuing social objectives in a rapidly changing and fragmenting environment, the need for political will not technical solutions to achieve redistribution and the potential for gender inequalities to re-emerge in new forms.”

### **Shen 2013**

[“Inequality quantified: Mind the gender gap”](https://doi.org/10.1038/495022a). *Nature*, 2013. Vol. 495, pg. 22-24. Doi: <https://doi.org/10.1038/495022a>

Gender gap in the sciences

“Female scientists have made steady gains in recent decades but they face persistent career challenges. US universities and colleges employ far more male scientists than female ones and men earn significantly more in science occupations.”

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## **Work Competence**

### **Heilman and Hayes 2005**

[“No Credit Where Credit is Due: Attributional Rationalization of Women’s Success in Male-Female Teams”](https://doi.org/10.1037/0021-9010.90.5.905). *Journal of Applied Psychology*, 2005. Vol. 90.5, pg. 905-916. Doi: <https://doi.org/10.1037/0021-9010.90.5.905>

Women’s work is devalued in mixed-sex dyads

“In 3 experimental studies, the authors explored how ambiguity about the source of a successful joint performance outcome promotes attributional rationalization, negatively affecting evaluations of women. Participants read descriptions of a mixed-sex dyad's work and were asked to evaluate its male and female members. Results indicated that unless the ambiguity about individual contribution to the dyad's successful joint outcome was constrained by providing feedback about individual team member performance (Study 1) or by the way in which the task was said to have been structured (Study 2) or unless the negative expectations about women's performance were challenged by clear evidence of prior work competence (Study 3), female members were devalued as compared with their male counterparts—they were rated as being less competent, less influential, and less likely to have played a

leadership role in work on the task. Implications of these results, both theoretical and practical, are discussed.”

## Working Hours

**Cha and Weeden 2014**

“[Overwork and the Slow Convergence in the Gender Gap in Wages](#)”. *American Sociological Review*, 2014. Vol. 79.3, pg. 457-484. Doi: <https://doi.org/10.1177/0003122414528936>

Pay from overtime has increased the gender pay gap.

“Despite rapid changes in women’s educational attainment and continuous labor force experience, convergence in the gender gap in wages slowed in the 1990s and stalled in the 2000s. Using CPS data from 1979 to 2009, we show that convergence in the gender gap in hourly pay over these three decades was attenuated by the increasing prevalence of “overwork” (defined as working 50 or more hours per week) and the rising hourly wage returns to overwork. Because a greater proportion of men engage in overwork, these changes raised men’s wages relative to women’s and exacerbated the gender wage gap by an estimated 10 percent of the total wage gap. This overwork effect was sufficiently large to offset the wage-equalizing effects of the narrowing gender gap in educational attainment and other forms of human capital. The overwork effect on trends in the gender gap in wages was most pronounced in professional and managerial occupations, where long work hours are especially common and the norm of overwork is deeply embedded in organizational practices and occupational cultures. These results illustrate how new ways of organizing work can perpetuate old forms of gender inequality.”

**Goldin 2014**

“[A Grand Gender Convergence: Its Last Chapter](#)”. *American Economic Review*, 2014. Vol. 104.4, pg. 1091-1119 Doi: <https://doi.org/10.1257/aer.104.4.1091>

To obtain gender equality in the labor market, the market itself must be restructured.

“The converging roles of men and women are among the grandest advances in society and the economy in the last century. These aspects of the grand gender convergence are figurative chapters in a history of gender roles. But what must the “last” chapter contain for there to be equality in the labor market? The answer may come as a surprise. The solution does not (necessarily) have to involve government intervention and it need not make men more responsible in the home (although that wouldn’t hurt). But it must involve changes in the labor market, especially how jobs are structured and remunerated to enhance temporal flexibility. The gender gap in pay would be considerably reduced and might vanish altogether if firms did not have an incentive to disproportionately reward individuals who labored long hours and worked particular hours. Such change has taken off in various sectors, such as technology, science, and health, but is less apparent in the corporate, financial, and legal worlds.”

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## Leadership/Promotion

### Catalyst 2007

[“The Double-Bind Dilemma for Women in Leadership: Damned if You Do, Doomed if you Don’t”](#). Catalyst, 2007. New York, NY. Available from <http://www.catalyst.org/knowledge/double-bind>.

Report on how gender stereotypes affect female leaders

“This report analyzes open-ended answers to survey questions as well as one-on-one interviews to reveal that gender stereotypes can create several predicaments for women leaders. Because they are often evaluated against a “masculine” standard of leadership, women are left with limited and unfavorable options, no matter how they behave and perform as leaders. In particular, three predicaments put women in a double bind and can potentially undermine their leadership as well as their own advancement options:

1. Extreme Perceptions: Women are perceived as too soft or too tough but never just right.
2. The High Competence Threshold: Women leaders face higher standards and lower rewards than men leaders.
3. Competent but Disliked: Women leaders are perceived as competent or liked, but rarely both.”

### Dasgupta and Asgari 2004

[“Seeing is believing: Exposure to counterstereotypic women leaders and its effect on the malleability of automatic gender stereotyping”](#). *Journal of Experimental Social Psychology*, 2004. Vol 40, pg. 642-658. Doi: <http://dx.doi.org/10.1016/j.jesp.2004.02.003>

Exposure to female leaders counteracts gender stereotyping

“Two studies tested the conditions under which social environments can undermine automatic gender stereotypic beliefs expressed by women. Study 1, a laboratory experiment, manipulated exposure to biographical information about famous female leaders. Study 2, a year-long field study, took advantage of pre-existing differences in the proportion of women occupying leadership positions (e.g., female professors) in two naturally occurring environments—a women’s college and a coeducational college. Together, these studies investigated: (a) whether exposure to women in leadership positions can temporarily undermine women’s automatic gender stereotypic beliefs, and (b) whether this effect is mediated by the frequency with which female leaders are encountered. Results revealed first that when women were in social contexts that exposed them to female leaders, they were less likely to express automatic stereotypic beliefs about their ingroup (Studies 1 and 2). Second, Study 2 showed that the long-term effect of social environments (women’s college vs. coed college) on automatic gender stereotyping was mediated by the frequency of exposure to women leaders (i.e., female faculty). Third, some academic environments (e.g., classes in male-dominated disciplines like science and math) produced an increase in automatic stereotypic beliefs among students at the coed college but not at the women’s college—importantly, this effect was mediated by the sex of the course instructors. Together,

these findings underscore the power of local environments in shaping women's nonconscious beliefs about their ingroup."

### **Eagly and Karau 2009**

"[Role Congruity Theory of Prejudice Toward Female Leaders](#)". *Psychological Review*, 2009. Vol 109.3, pg. 573-598. Doi: <http://dx.doi.org/10.1037/0033-295X.109.3.573>

The perceived incongruity between women and leadership means that female leaders are viewed less favorably than male counterparts, and women are less likely to become leaders.

"A role congruity theory of prejudice toward female leaders proposes that perceived incongruity between the female gender role and leadership roles leads to 2 forms of prejudice: (a) perceiving women less favorably than men as potential occupants of leadership roles and (b) evaluating behavior that fulfills the prescriptions of a leader role less favorably when it is enacted by a woman. One consequence is that attitudes are less positive toward female than male leaders and potential leaders. Other consequences are that it is more difficult for women to become leaders and to achieve success in leadership roles. Evidence from varied research paradigms substantiates that these consequences occur, especially in situations that heighten perceptions of incongruity between the female gender role and leadership roles."

### **England 2010**

"[The Gender Revolution: Uneven and Stalled](#)". (Sociologists for Women in Society Feminist Lecture) *Gender and Society*, 2010. Vol. 24.2, pg. 149-166. Doi: <https://doi.org/10.1177/0891243210361475>

Why some women have taken jobs traditionally associated with men, but men have not done the reverse

"In this article, the author describes sweeping changes in the gender system and offers explanations for why change has been uneven. Because the devaluation of activities done by women has changed little, women have had strong incentive to enter male jobs, but men have had little incentive to take on female activities or jobs. The gender egalitarianism that gained traction was the notion that women should have access to upward mobility and to all areas of schooling and jobs. But persistent gender essentialism means that most people follow gender-typical paths except when upward mobility is impossible otherwise. Middle-class women entered managerial and professional jobs more than working-class women integrated blue-collar jobs because the latter were able to move up while choosing a "female" occupation; many mothers of middle-class women were already in the highest-status female occupations. The author also notes a number of gender-egalitarian trends that have stalled."

### **Heilman and Hayes 2005**

["No Credit Where Credit is Due: Attributional Rationalization of Women's Success in Male-Female Teams"](https://doi.org/10.1037/0021-9010.90.5.905). *Journal of Applied Psychology*, 2005. Vol. 90.5, pg. 905-916. Doi: <https://doi.org/10.1037/0021-9010.90.5.905>

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#### **Heilman and Okimoto 2007**

["Why are women penalized for success at male tasks?: the implied communality deficit"](https://doi.org/10.1037/0021-9010.92.1.81). *Journal of Applied Psychology*, 2007. Vol 92.1, pgs. 81-92. Doi: <https://doi.org/10.1037/0021-9010.92.1.81>

Women are penalized for succeeding in "male domains" because they are seen as violating gender norms.

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#### **Heilman and Okimoto 2008**

["Motherhood: a potential source of bias in employment decisions"](https://doi.org/10.1037/0021-9010.93.1.189). *Journal of Applied Psychology*, 2008. Vol. 93.1, pg. 189-98. Doi: <https://doi.org/10.1037/0021-9010.93.1.189>

Bias against mothers seeking promotion



“Results of 2 experimental studies in which job incumbents were said to be applying for promotions to traditionally male positions demonstrated bias against mothers in competence expectations and in screening recommendations. This bias occurred regardless of whether the research participants were students (Study 1) or working people (Study 2). Although anticipated job commitment, achievement striving, and dependability were rated as generally lower for parents than for nonparents, anticipated competence was uniquely low for mothers. Mediation analyses indicated that, as predicted, negativity in competence expectations, not anticipated job commitment or achievement striving, promoted the motherhood bias in screening recommendations; expected deficits in agentic behaviors, not in dependability, were found to fuel these competence expectations. These findings suggest that motherhood can indeed hinder the career advancement of women and that it is the heightened association with gender stereotypes that occurs when women are mothers that is the source of motherhood's potentially adverse consequences.”

### **Long 2014**

“[Women, leadership and the ‘glass cliff’: Research roundup](http://journalistsresource.org/studies/society/gender-society/women-leadership-glass-cliff-research-roundup)”. *Journalist’s Resource* (Harvard Kennedy School Shorenstein Center on Media, Politics and Public Policy), 2014. Available from <<http://journalistsresource.org/studies/society/gender-society/women-leadership-glass-cliff-research-roundup>>

Overview of research on female leadership in the US and a list of articles on the subject

### **Phelan, Moss-Racusin, and Rudman 2008**

“[Competent Yet Out in the Cold: Shifting Criteria for Hiring Reflect Backlash Toward Agentic Women](https://doi.org/10.1111/j.1471-6402.2008.00454.x)”. *Psychology of Women Quarterly*, 2008. Vol. 32.4, pg. 406-413. Doi: <https://doi.org/10.1111/j.1471-6402.2008.00454.x>

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## **Competition**

### **Niederle and Vesterlund 2007**

[“Do Women avoid competition? Do Men Compete Too Much?”](#) *The Quarterly Journal of Economics.*, 2007. Vol. 112.3, pg. 1067-1101. Doi: <https://doi.org/10.1162/qjec.122.3.1067>

Women avoid competition, while men embrace it.

“We examine whether men and women of the same ability differ in their selection into a competitive environment. Participants in a laboratory experiment solve a real task, first under a noncompetitive piece rate and then a competitive tournament incentive scheme. Although there are no gender differences in performance, men select the tournament twice as much as women when choosing their compensation scheme for the next performance. While 73 percent of the men select the tournament, only 35 percent of the women make this choice. This gender gap in tournament entry is not explained by performance, and factors such as risk and feedback aversion only play a negligible role. Instead, the tournament-entry gap is driven by men being more overconfident and by gender differences in preferences for performing in a competition. The result is that Women avoid competition and men embrace it.”

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## Identity

### Gender

#### **Budig and England 2001**

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Women with children are paid less than other employees.

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### **Carlsson and Rooth 2007**

[“Evidence of ethnic discrimination in the Swedish labor market using experimental data”](#). *Labour Economics*, 2007. Vol. 14.4, pg. 716-729. Doi: <http://dx.doi.org/10.1016/j.labeco.2007.05.001>

Different minorities have unequal hiring rates based on names on applications.

“We present evidence of ethnic discrimination in the recruitment process by sending fictitious applications to real job openings. Applications with identical skills were randomly assigned Middle Eastern- or Swedish-sounding names and applications with a Swedish name receive fifty percent more callbacks for an interview.

We extend previous analyses by adding register and interview information on firms/recruiters to the experimental data. We find that male recruiters and workplaces with fewer than twenty employees less often call applications with a Middle Eastern name for an interview.”

### **Catalyst 2007**

[“The Double-Bind Dilemma for Women in Leadership: Damned if You Do, Doomed if you Don’t”](#). *Catalyst*, 2007. New York, NY. Available from <http://www.catalyst.org/knowledge/double-bind>.

Report on how gender stereotypes affect female leaders

“This report analyzes open-ended answers to survey questions as well as one-on-one interviews to reveal that gender stereotypes can create several predicaments for women leaders. Because they are often evaluated against a “masculine” standard of leadership, women are left with limited and unfavorable options, no matter how they behave and perform as leaders. In particular, three predicaments put women in a double bind and can potentially undermine their leadership as well as their own advancement options:

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### **Correll, Benard, and Paik 2007**

["Getting a Job: Is There a Motherhood Penalty?"](#) *American Journal of Sociology*, 2007. Vol. 112 pg. 1297-1338. Doi: <https://doi.org/10.1086/511799>

Female employees are penalized for parenting, but men may benefit from it.

"Survey research finds that mothers suffer a substantial wage penalty, although the causal mechanism producing it remains elusive. The authors employed a laboratory experiment to evaluate the hypothesis that status-based discrimination plays an important role and an audit study of actual employers to assess its real-world implications. In both studies, participants evaluated application materials for a pair of same-gender equally qualified job candidates who differed on parental status. The laboratory experiment found that mothers were penalized on a host of measures, including perceived competence and recommended starting salary. Men were not penalized for, and sometimes benefited from, being a parent. The audit study showed that actual employers discriminate against mothers, but not against fathers."

### **Daguid and Thomas-Hunt 2015**

["Condoning Stereotyping? How Awareness of Stereotyping Prevalence Impacts Expression of Stereotypes"](#). *Journal of Applied Psychology*, 2015. Vol. 100.2, pg. 343-339. Doi: <https://doi.org/10.1037/a0037908>

Increased awareness of stereotyping can lead to increased stereotyping behaviors.

"The deleterious effects of stereotyping on individual and group outcomes have prompted a search for solutions. One approach has been to increase awareness of the prevalence of stereotyping in the hope of motivating individuals to resist natural inclinations. However, it could be that this strategy creates a norm for stereotyping, which paradoxically undermines desired effects. The present research demonstrates that individuals who received a high prevalence of stereotyping message expressed more stereotypes than those who received a low prevalence of stereotyping message (Studies 1a, 1b, 1c, and 2) or no message (Study 2). Furthermore, working professionals who received a high prevalence of stereotyping message were less willing to work with an individual who violated stereotypical norms than those who received no message, a low prevalence of stereotyping message, or a high prevalence of counter-stereotyping effort message (Study 3). Also, in a competitive task, individuals who received a high prevalence of stereotyping message treated their opponents in more stereotype-consistent ways

than those who received a low prevalence of stereotyping message or those who received a high prevalence of counter-stereotyping effort message (Study 4)."

#### **Dasgupta and Asgari 2004**

["Seeing is believing: Exposure to counterstereotypic women leaders and its effect on the malleability of automatic gender stereotyping"](#). *Journal of Experimental Social Psychology*, 2004. Vol 40, pg. 642-658. Doi: <http://dx.doi.org/10.1016/j.jesp.2004.02.003>

Exposure to female leaders counteracts gender stereotyping

"Two studies tested the conditions under which social environments can undermine automatic gender stereotypic beliefs expressed by women. Study 1, a laboratory experiment, manipulated exposure to biographical information about famous female leaders. Study 2, a year-long field study, took advantage of pre-existing differences in the proportion of women occupying leadership positions (e.g., female professors) in two naturally occurring environments—a women's college and a coeducational college. Together, these studies investigated: (a) whether exposure to women in leadership positions can temporarily undermine women's automatic gender stereotypic beliefs, and (b) whether this effect is mediated by the frequency with which female leaders are encountered. Results revealed first that when women were in social contexts that exposed them to female leaders, they were less likely to express automatic stereotypic beliefs about their ingroup (Studies 1 and 2). Second, Study 2 showed that the long-term effect of social environments (women's college vs. coed college) on automatic gender stereotyping was mediated by the frequency of exposure to women leaders (i.e., female faculty). Third, some academic environments (e.g., classes in male-dominated disciplines like science and math) produced an increase in automatic stereotypic beliefs among students at the coed college but not at the women's college—importantly, this effect was mediated by the sex of the course instructors. Together, these findings underscore the power of local environments in shaping women's nonconscious beliefs about their ingroup."

#### **Eagly and Karau 2009**

["Role Congruity Theory of Prejudice Toward Female Leaders"](#). *Psychological Review*, 2009. Vol 109.3, pg. 573-598. Doi: <http://dx.doi.org/10.1037/0033-295X.109.3.573>

The perceived incongruity between women and leadership means that female leaders are viewed less favorably than male counterparts, and women are less likely to become leaders.

"A role congruity theory of prejudice toward female leaders proposes that perceived incongruity between the female gender role and leadership roles leads to 2 forms of prejudice: (a) perceiving women less favorably than men as potential occupants of leadership roles and (b) evaluating behavior that fulfills the prescriptions of a leader role less favorably when it is enacted by a woman. One consequence is that attitudes are less positive toward female than male leaders and potential leaders. Other consequences are that it is more difficult for women to become leaders and to achieve success in leadership roles. Evidence from varied research paradigms substantiates that these consequences occur,

especially in situations that heighten perceptions of incongruity between the female gender role and leadership roles.”

### **England 2010**

“[The Gender Revolution: Uneven and Stalled](https://doi.org/10.1177/0891243210361475)”. (Sociologists for Women in Society Feminist Lecture) *Gender and Society*, 2010. Vol. 24.2, pg. 149-166. Doi: <https://doi.org/10.1177/0891243210361475>

Why some women have taken jobs traditionally associated with men, but men have not done the reverse

“In this article, the author describes sweeping changes in the gender system and offers explanations for why change has been uneven. Because the devaluation of activities done by women has changed little, women have had strong incentive to enter male jobs, but men have had little incentive to take on female activities or jobs. The gender egalitarianism that gained traction was the notion that women should have access to upward mobility and to all areas of schooling and jobs. But persistent gender essentialism means that most people follow gender-typical paths except when upward mobility is impossible otherwise. Middle-class women entered managerial and professional jobs more than working-class women integrated blue-collar jobs because the latter were able to move up while choosing a “female” occupation; many mothers of middle-class women were already in the highest-status female occupations. The author also notes a number of gender-egalitarian trends that have stalled.”

### **Goldin 2014**

“[A Grand Gender Convergence: Its Last Chapter](https://doi.org/10.1257/aer.104.4.1091)”. *American Economic Review*, 2014. Vol. 104.4, pg. 1091-1119 Doi: <https://doi.org/10.1257/aer.104.4.1091>

To obtain gender equality in the labor market, the market itself must be restructured.

“The converging roles of men and women are among the grandest advances in society and the economy in the last century. These aspects of the grand gender convergence are figurative chapters in a history of gender roles. But what must the “last” chapter contain for there to be equality in the labor market? The answer may come as a surprise. The solution does not (necessarily) have to involve government intervention and it need not make men more responsible in the home (although that wouldn't hurt). But it must involve changes in the labor market, especially how jobs are structured and remunerated to enhance temporal flexibility. The gender gap in pay would be considerably reduced and might vanish altogether if firms did not have an incentive to disproportionately reward individuals who labored long hours and worked particular hours. Such change has taken off in various sectors, such as technology, science, and health, but is less apparent in the corporate, financial, and legal worlds.”

### **Goldin and Rouse 2000**

["Orchestrating Impartiality: The Impact of 'Blind' Auditions on Female Musicians"](#). *American Economic Review*, 2000. Vol. 90.4, pg. 715-741.

"Blind" auditions increase number of women hired for orchestras.

"A change in the audition procedures of symphony orchestras--adoption of "blind" auditions with a "screen" to conceal the candidate's identity from the jury--provides a test for sex-biased hiring. Using data from actual auditions, in an individual fixed-effects framework, we find that the screen increases the probability a woman will be advanced and hired. Although some of our estimates have large standard errors and there is one persistent effect in the opposite direction, the weight of the evidence suggests that the blind audition procedure fostered impartiality in hiring and increased the proportion women in symphony orchestras."

### **Heilman and Hayes 2005**

["No Credit Where Credit is Due: Attributional Rationalization of Women's Success in Male-Female Teams"](#). *Journal of Applied Psychology*, 2005. Vol. 90.5, pg. 905-916. Doi: <https://doi.org/10.1037/0021-9010.90.5.905>

Women's work is devalued in mixed-sex dyads.

"In 3 experimental studies, the authors explored how ambiguity about the source of a successful joint performance outcome promotes attributional rationalization, negatively affecting evaluations of women. Participants read descriptions of a mixed-sex dyad's work and were asked to evaluate its male and female members. Results indicated that unless the ambiguity about individual contribution to the dyad's successful joint outcome was constrained by providing feedback about individual team member performance (Study 1) or by the way in which the task was said to have been structured (Study 2) or unless the negative expectations about women's performance were challenged by clear evidence of prior work competence (Study 3), female members were devalued as compared with their male counterparts--they were rated as being less competent, less influential, and less likely to have played a leadership role in work on the task. Implications of these results, both theoretical and practical, are discussed."

### **Heilman and Okimoto 2007**

["Why are women penalized for success at male tasks?: the implied communality deficit"](#). *Journal of Applied Psychology*, 2007. Vol 92.1, pgs. 81-92. Doi: <https://doi.org/10.1037/0021-9010.92.1.81>

Women are penalized for succeeding in "male domains" because they are seen as violating gender norms.

"In 3 experimental studies, the authors tested the idea that penalties women incur for success in traditionally male areas arise from a perceived deficit in nurturing and socially sensitive communal attributes that is implied by their success. The authors therefore expected that providing information of communality would prevent these penalties. Results indicated that the negativity directed at successful female managers--in ratings of likability, interpersonal hostility, and boss desirability--was mitigated when

there was indication that they were communal. This ameliorative effect occurred only when the information was clearly indicative of communal attributes (Study 1) and when it could be unambiguously attributed to the female manager (Study 2); furthermore, these penalties were averted when communality was conveyed by role information (motherhood status) or by behavior (Study 3). These findings support the idea that penalties for women's success in male domains result from the perceived violation of gender-stereotypic prescriptions."

### **Heilman and Okimoto 2008**

["Motherhood: a potential source of bias in employment decisions"](#). *Journal of Applied Psychology*, 2008. Vol. 93.1, pg. 189-98. Doi: <https://doi.org/10.1037/0021-9010.93.1.189>

Bias against mothers seeking promotion

"Results of 2 experimental studies in which job incumbents were said to be applying for promotions to traditionally male positions demonstrated bias against mothers in competence expectations and in screening recommendations. This bias occurred regardless of whether the research participants were students (Study 1) or working people (Study 2). Although anticipated job commitment, achievement striving, and dependability were rated as generally lower for parents than for nonparents, anticipated competence was uniquely low for mothers. Mediation analyses indicated that, as predicted, negativity in competence expectations, not anticipated job commitment or achievement striving, promoted the motherhood bias in screening recommendations; expected deficits in agentic behaviors, not in dependability, were found to fuel these competence expectations. These findings suggest that motherhood can indeed hinder the career advancement of women and that it is the heightened association with gender stereotypes that occurs when women are mothers that is the source of motherhood's potentially adverse consequences."

### **Levanon, England, and Allison 2009**

["Occupational Feminization and Pay: Assessing Causal Dynamics Using 1950-2000 U.S. Census Data"](#). *Social Forces* (The University of North Carolina Press), 2009. Vol. 88.2, pg. 865-892. Doi: <https://doi.org/10.1353/sof.0.0264>

Occupations with a greater number of female employees pay less than others due to devaluation of the labor.

"Occupations with a greater share of females pay less than those with a lower share, controlling for education and skill. This association is explained by two dominant views: devaluation and queuing. The former views the pay offered in an occupation to affect its female proportion, due to employers' preference for men—a gendered labor queue. The latter argues that the proportion of females in an occupation affects pay, owing to devaluation of work done by women. Only a few past studies used longitudinal data, which is needed to test the theories. We use fixed-effects models, thus controlling for stable characteristics of occupations, and U.S. Census data from 1950 through 2000. We find substantial evidence for the devaluation view, but only scant evidence for the queuing view."



## **Long 2014**

[“Women, leadership and the ‘glass cliff’: Research roundup”](http://journalistsresource.org/studies/society/gender-society/women-leadership-glass-cliff-research-roundup). *Journalist’s Resource* (Harvard Kennedy School Shorenstein Center on Media, Politics and Public Policy), 2014. Available from <http://journalistsresource.org/studies/society/gender-society/women-leadership-glass-cliff-research-roundup>

Overview of research on female leadership in the US and a list of articles on the subject

## **Niederle and Vesterlund 2007**

[“Do Women avoid competition? Do Men Compete Too Much?”](https://doi.org/10.1162/qjec.122.3.1067) *The Quarterly Journal of Economics.*, 2007. Vol. 112.3, pg. 1067-1101. Doi: <https://doi.org/10.1162/qjec.122.3.1067>

Women avoid competition, while men embrace it.

“We examine whether men and women of the same ability differ in their selection into a competitive environment. Participants in a laboratory experiment solve a real task, first under a noncompetitive piece rate and then a competitive tournament incentive scheme. Although there are no gender differences in performance, men select the tournament twice as much as women when choosing their compensation scheme for the next performance. While 73 percent of the men select the tournament, only 35 percent of the women make this choice. This gender gap in tournament entry is not explained by performance, and factors such as risk and feedback aversion only play a negligible role. Instead, the tournament-entry gap is driven by men being more overconfident and by gender differences in preferences for performing in a competition. The result is that Women avoid competition and men embrace it.”

## **O'Reilly, Smith, Deakin, and Burchell 2015**

[“Equal Pay as a Moving Target: International perspectives on forty-years of addressing the gender pay gap”](https://doi.org/10.1093/cje/bev010). *Cambridge Journal of Economics*, 2015. Vol. 39.2, pg. 299-317. Doi: <https://doi.org/10.1093/cje/bev010>

Discussing the gender pay gap in the UK, Europe, and Australia

“This paper provides an overview of the key factors impacting upon the gender pay gap in the UK, Europe and Australia. Forty years after the implementation of the first equal pay legislation, the pay gap remains a key aspect of the inequalities women face in the labour market. While the overall pay gap has tended to fall in many countries over the past forty years, it has not closed; in some countries it has been stubbornly resistant, or has even widened. In reviewing the collection of papers that make up this special issue we identify four broad themes with which to group the contributions and draw out the explanations for diverse trends: theoretical and conceptual debates; legal developments and their impacts; wage setting institutions and changing employer demands; and newly emerging pay inequalities between and within educational and ethnic groups. Across the four themes we underline

how the trends in the gender pay gap capture the dynamism of inequalities, as the market power of different groups and stakeholders changes over times. Three key dimensions emerge from the papers to provide a framework for future research and policy discourse: the relationship between litigation and bargaining strategies; the interaction between wage-setting institutions and new organisational practices; and the increasing and range of diversity or equality strands competing for equal treatment. We conclude that progress towards closing the gender pay gap will not be easy, will require a collective effort of various actors, and will not be quick.”

### **Phelan, Moss-Racusin, and Rudman 2008**

“[Competent Yet Out in the Cold: Shifting Criteria for Hiring Reflect Backlash Toward Agentic Women](#)”. *Psychology of Women Quarterly*, 2008. Vol. 32.4, pg. 406-413. Doi: <https://doi.org/10.1111/j.1471-6402.2008.00454.x>

Bias in hiring against women with agency

“We present evidence that shifting hiring criteria reflects backlash toward agentic (“masterful”) women (Rudman, 1998). Participants (N = 428) evaluated male or female agentic or communal managerial applicants on dimensions of competence, social skills, and hireability. Consistent with past research, agentic women were perceived as highly competent but deficient in social skills, compared with agentic men. New to the present research, social skills predicted hiring decisions more than competence for agentic women; for all other applicants, competence received more weight than social skills. Thus, evaluators shifted the job criteria away from agentic women's strong suit (competence) and toward their perceived deficit (social skills) to justify hiring discrimination. The implications of these findings for women's professional success are discussed.”

### **Shen 2013**

“[Inequality quantified: Mind the gender gap](#)”. *Nature*, 2013. Vol. 495, pg. 22-24. Doi: <https://doi.org/10.1038/495022a>

Gender gap in the sciences

“Female scientists have made steady gains in recent decades but they face persistent career challenges. US universities and colleges employ far more male scientists than female ones and men earn significantly more in science occupations.”

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## **Marriage**

### **Budig and England 2001**

["The Wage Penalty for Motherhood"](#). *American Sociological Review*, 2001. Vol 66, pg. 204-225.

Women with children are paid less than other employees.

"Motherhood is associated with lower hourly pay, but the causes of this are not well understood. Mothers may earn less than other women because having children causes them to (1) lose job experience, (2) be less productive at work, (3) trade off higher wages for mother-friendly jobs, or (4) be discriminated against by employers. Or the relationship may be spurious rather than causal—women with lower earning potential may have children at relatively higher rates. The authors use data from the 1982–1993 National Longitudinal Survey of Youth with fixed-effects models to examine the wage penalty for motherhood. Results show a wage penalty of 7 percent per child. Penalties are larger for married women than for unmarried women. Women with (more) children have fewer years of job experience, and after controlling for experience a penalty of 5 percent per child remains. "Mother-friendly" characteristics of the jobs held by mothers explain little of the penalty beyond the tendency of more mothers than non-mothers to work part-time. The portion of the motherhood penalty unexplained probably results from the effect of motherhood on productivity and/or from discrimination by employers against mothers. While the benefits of mothering diffuse widely—to the employers, neighbors, friends, spouses, and children of the adults who received the mothering—the costs of child rearing are borne disproportionately by mothers."

## Parenting

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### **Correll, Benard, and Paik 2007**

["Getting a Job: Is There a Motherhood Penalty?"](#) *American Journal of Sociology*, 2007. Vol. 112 pg. 1297-1338. Doi: <https://doi.org/10.1086/511799>

Female employees are penalized for parenting, but men may benefit from it.

"Survey research finds that mothers suffer a substantial wage penalty, although the causal mechanism producing it remains elusive. The authors employed a laboratory experiment to evaluate the hypothesis that status-based discrimination plays an important role and an audit study of actual employers to assess its real-world implications. In both studies, participants evaluated application materials for a pair of same-gender equally qualified job candidates who differed on parental status. The laboratory experiment found that mothers were penalized on a host of measures, including perceived competence and recommended starting salary. Men were not penalized for, and sometimes benefited from, being a parent. The audit study showed that actual employers discriminate against mothers, but not against fathers."

### **Heilman and Okimoto 2008**

["Motherhood: a potential source of bias in employment decisions"](#). *Journal of Applied Psychology*, 2008. Vol. 93.1, pg. 189-98. Doi: <https://doi.org/10.1037/0021-9010.93.1.189>

Bias against mothers seeking promotion

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## Race/Ethnicity

### **Bertrand and Mullainathan 2003**

[“Are Emily and Greg more employable than Lakisha and Jamal? A field experiment on labor market discrimination”](#). *American Economic Review*, 2004. Vol 94.4, pg. 991-1013. Doi: <http://doi.org/10.1257/0002828042002561>

People with “White” names are more likely to be hired than those with “Black” names.

We study race in the labor market by sending fictitious resumes to help-wanted ads in Boston and Chicago newspapers. To manipulate perceived race, resumes are randomly assigned African-American- or White-sounding names. White names receive 50 percent more callbacks for interviews. Callbacks are also more responsive to resume quality for White names than for African-American ones. The racial gap is uniform across occupation, industry, and employer size. We also find little evidence that employers are inferring social class from the names. Differential treatment by race still appears to still be prominent in the U. S. labor market.

### **Booth, Leigh, and Varganova 2010**

[“Does Racial and Ethnic Discrimination Vary Across Minority Groups? Evidence from a Field Experiment”](#). *Oxford Bulletin of Economics and Statistics*, 2010. Vol. 74, pg. 547-573 Doi: <http://dx.doi.org/10.1111/j.1468-0084.2011.00664.x>

Different minorities have unequal hiring rates based on names on applications.

“We conduct a large-scale audit discrimination study to measure labor market discrimination across different minority groups in Australia - a country where one quarter of the population was born overseas. To denote ethnicity, we use distinctively Anglo-Saxon, Indigenous, Italian, Chinese, and Middle Eastern names, and our goal is a comparison across multiple ethnic groups rather than focusing on a single minority as in most other studies. In all cases, we applied for entry-level jobs and submitted a CV showing that the candidate had attended high school in Australia. We find economically and statistically significant differences in callback rates, suggesting that ethnic minority candidates would need to apply for more jobs in order to receive the same number of interviews. These differences vary systematically across groups, with Italians (a more established migrant group) suffering less discrimination than Chinese and Middle Easterners (who have typically arrived more recently). We also explore various explanations for our empirical findings.”

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Women with children are paid less than other employees.

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### **Carlsson and Rooth 2007**

[“Evidence of ethnic discrimination in the Swedish labor market using experimental data”](#). *Labour Economics*, 2007. Vol. 14.4, pg. 716-729. Doi: <http://dx.doi.org/10.1016/j.labeco.2007.05.001>

Different minorities have unequal hiring rates based on names on applications.

“We present evidence of ethnic discrimination in the recruitment process by sending fictitious applications to real job openings. Applications with identical skills were randomly assigned Middle

Eastern- or Swedish-sounding names and applications with a Swedish name receive fifty percent more callbacks for an interview.

We extend previous analyses by adding register and interview information on firms/recruiters to the experimental data. We find that male recruiters and workplaces with fewer than twenty employees less often call applications with a Middle Eastern name for an interview.”

## **Collins 2007**

[“Tackling Unconscious Bias in Hiring Practices: The Plight of the Rooney Rule”](#). New York University Law Review, 2007. Vol. 82, pg. 870-912.

Rule requiring all job searches for NFL head coaches to include at least one person of color is successful in increasing the number of head coaches of color.

“This Note analyzes the National Football League’s (NFL) 2002 decision to implement an innovative—and controversial—policy aimed at increasing the League’s number of minority head coaches. Designated the “Rooney Rule,” the policy mandates that every NFL team interview at least one minority candidate upon the vacancy of a head coaching position or be subjected to a significant monetary fine. Despite ongoing allegations that it promotes tokenism and is a form of reverse discrimination, the Rule has reached uncharted success. While other professional sports with large minority populations (e.g., the National Basketball Association) have succeeded in integrating their head coaching positions over the past twenty years without analogous action, this Note argues that the pre-Rooney Rule NFL hiring process remained relatively static because decisionmakers unwittingly held (and often still hold) archaic biases regarding the intellectual ability of minority candidates to handle the high degree of organizational complexity in football. By deftly traversing the line between “soft” and “hard” variants of affirmative action, the Rule has proven effective because it forces decisionmakers harboring this unconscious bias to expand previously restricted coaching networks and come face-to-face with a candidate they would never have considered otherwise.”

## **Size**

### **Daguid and Thomas-Hunt 2015**

[“Condoning Stereotyping? How Awareness of Stereotyping Prevalence Impacts Expression of Stereotypes”](#). *Journal of Applied Psychology*, 2015. Vol. 100.2, pg. 343-339. Doi: <https://doi.org/10.1037/a0037908>

Increased awareness of stereotyping can lead to increased stereotyping behaviors.

“The deleterious effects of stereotyping on individual and group outcomes have prompted a search for solutions. One approach has been to increase awareness of the prevalence of stereotyping in the hope of motivating individuals to resist natural inclinations. However, it could be that this strategy creates a norm for stereotyping, which paradoxically undermines desired effects. The present research demonstrates that individuals who received a high prevalence of stereotyping message expressed more

stereotypes than those who received a low prevalence of stereotyping message (Studies 1a, 1b, 1c, and 2) or no message (Study 2). Furthermore, working professionals who received a high prevalence of stereotyping message were less willing to work with an individual who violated stereotypical norms than those who received no message, a low prevalence of stereotyping message, or a high prevalence of counter-stereotyping effort message (Study 3). Also, in a competitive task, individuals who received a high prevalence of stereotyping message treated their opponents in more stereotype-consistent ways than those who received a low prevalence of stereotyping message or those who received a high prevalence of counter-stereotyping effort message (Study 4)."

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## Age

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## Education/Class

### Budig and England 2001

["The Wage Penalty for Motherhood"](#). *American Sociological Review*, 2001. Vol 66, pg. 204-225.

Women with children are paid less than other employees.



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## England 2010

“[The Gender Revolution: Uneven and Stalled](#)”. (Sociologists for Women in Society Feminist Lecture) *Gender and Society*, 2010. Vol. 24.2, pg. 149-166. Doi: <https://doi.org/10.1177/0891243210361475>

Why some women have taken jobs traditionally associated with men, but men have not done the reverse

“In this article, the author describes sweeping changes in the gender system and offers explanations for why change has been uneven. Because the devaluation of activities done by women has changed little, women have had strong incentive to enter male jobs, but men have had little incentive to take on female activities or jobs. The gender egalitarianism that gained traction was the notion that women should have access to upward mobility and to all areas of schooling and jobs. But persistent gender essentialism means that most people follow gender-typical paths except when upward mobility is impossible otherwise. Middle-class women entered managerial and professional jobs more than working-class women integrated blue-collar jobs because the latter were able to move up while choosing a “female” occupation; many mothers of middle-class women were already in the highest-status female occupations. The author also notes a number of gender-egalitarian trends that have stalled.”

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## UB Subject

IAT

## **Greenwald and Krieger 2006**

[“Implicit Bias: Scientific Foundations”](#). *California Law Review*, 2006. Vol 94.4, pg. 945-968. Doi: <http://dx.doi.org/doi:10.15779/Z38GH7F>

Good review of implicit bias and analysis of the IAT

## **Jost, Rudman, Blair, Carney, Dasgupta, Glaser, and Hardin 2009**

[“The existence of implicit bias is beyond reasonable doubt: A refutation of ideological and methodological objections and executive summary of ten studies that no manager should ignore”](#). *Research in Organizational Behavior*, 2009. Vol. 29, pg. 39-69. Doi: <http://dx.doi.org/10.1016/j.riob.2009.10.001>

Proves implicit bias exists and refutes people who criticize IAT

“In this article, we respond at length to recent critiques of research on implicit bias, especially studies using the Implicit Association Test (IAT). Tetlock and Mitchell (2009) claim that “there is no evidence that the IAT reliably predicts class-wide discrimination on tangible outcomes in any setting,” accuse their colleagues of violating “the injunction to separate factual from value judgments,” adhering blindly to a “statist interventionist” ideology, and of conducting a witch-hunt against implicit racists, sexists, and others. These and other charges are specious. Far from making “extraordinary claims” that “require extraordinary evidence,” researchers have identified the existence and consequences of implicit bias through well-established methods based upon principles of cognitive psychology that have been developed in nearly a century's worth of work. We challenge the blanket skepticism and organizational complacency advocated by Tetlock and Mitchell and summarize 10 recent studies that no manager (or managerial researcher) should ignore. These studies reveal that students, nurses, doctors, police officers, employment recruiters, and many others exhibit implicit biases with respect to race, ethnicity, nationality, gender, social status, and other distinctions. Furthermore—and contrary to the emphatic assertions of the critics—participants’ implicit associations do predict socially and organizationally significant behaviors, including employment, medical, and voting decisions made by working adults.”

## **Stereotyping**

### **Catalyst 2007**

[“The Double-Bind Dilemma for Women in Leadership: Damned if You Do, Doomed if you Don’t”](#). *Catalyst*, 2007. New York, NY. Available from <http://www.catalyst.org/knowledge/double-bind>.

Report on how gender stereotypes affect female leaders

“This report analyzes open-ended answers to survey questions as well as one-on-one interviews to reveal that gender stereotypes can create several predicaments for women leaders. Because they are often evaluated against a “masculine” standard of leadership, women are left with limited and unfavorable options, no matter how they behave and perform as leaders. In particular, three

predicaments put women in a double bind and can potentially undermine their leadership as well as their own advancement options:

1. Extreme Perceptions: Women are perceived as too soft or too tough but never just right.
2. The High Competence Threshold: Women leaders face higher standards and lower rewards than men leaders.
3. Competent but Disliked: Women leaders are perceived as competent or liked, but rarely both."

### **Daguid and Thomas-Hunt 2015**

["Condoning Stereotyping? How Awareness of Stereotyping Prevalence Impacts Expression of Stereotypes"](https://doi.org/10.1037/a0037908). *Journal of Applied Psychology*, 2015. Vol. 100.2, pg. 343-339. Doi: <https://doi.org/10.1037/a0037908>

Increased awareness of stereotyping can lead to increased stereotyping behaviors.

"The deleterious effects of stereotyping on individual and group outcomes have prompted a search for solutions. One approach has been to increase awareness of the prevalence of stereotyping in the hope of motivating individuals to resist natural inclinations. However, it could be that this strategy creates a norm for stereotyping, which paradoxically undermines desired effects. The present research demonstrates that individuals who received a high prevalence of stereotyping message expressed more stereotypes than those who received a low prevalence of stereotyping message (Studies 1a, 1b, 1c, and 2) or no message (Study 2). Furthermore, working professionals who received a high prevalence of stereotyping message were less willing to work with an individual who violated stereotypical norms than those who received no message, a low prevalence of stereotyping message, or a high prevalence of counter-stereotyping effort message (Study 3). Also, in a competitive task, individuals who received a high prevalence of stereotyping message treated their opponents in more stereotype-consistent ways than those who received a low prevalence of stereotyping message or those who received a high prevalence of counter-stereotyping effort message (Study 4)."

### **Heilman and Hayes 2005**

["No Credit Where Credit is Due: Attributional Rationalization of Women's Success in Male-Female Teams"](https://doi.org/10.1037/0021-9010.90.5.905). *Journal of Applied Psychology*, 2005. Vol. 90.5, pg. 905-916. Doi: <https://doi.org/10.1037/0021-9010.90.5.905>

Women's work is devalued in mixed-sex dyads.

"In 3 experimental studies, the authors explored how ambiguity about the source of a successful joint performance outcome promotes attributional rationalization, negatively affecting evaluations of women. Participants read descriptions of a mixed-sex dyad's work and were asked to evaluate its male and female members. Results indicated that unless the ambiguity about individual contribution to the dyad's successful joint outcome was constrained by providing feedback about individual team member performance (Study 1) or by the way in which the task was said to have been structured (Study 2) or

unless the negative expectations about women's performance were challenged by clear evidence of prior work competence (Study 3), female members were devalued as compared with their male counterparts—they were rated as being less competent, less influential, and less likely to have played a leadership role in work on the task. Implications of these results, both theoretical and practical, are discussed.”

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## Improvements Through Training

**Dasgupta and Asgari 2004**

“[Seeing is believing: Exposure to counterstereotypic women leaders and its effect on the malleability of automatic gender stereotyping](#)”. *Journal of Experimental Social Psychology*, 2004. Vol 40, pg. 642-658.  
Doi: <http://dx.doi.org/10.1016/j.jesp.2004.02.003>

Exposure to female leaders counteracts gender stereotyping

“Two studies tested the conditions under which social environments can undermine automatic gender stereotypic beliefs expressed by women. Study 1, a laboratory experiment, manipulated exposure to biographical information about famous female leaders. Study 2, a year-long field study, took advantage of pre-existing differences in the proportion of women occupying leadership positions (e.g., female professors) in two naturally occurring environments—a women’s college and a coeducational college. Together, these studies investigated: (a) whether exposure to women in leadership positions can temporarily undermine women’s automatic gender stereotypic beliefs, and (b) whether this effect is mediated by the frequency with which female leaders are encountered. Results revealed first that when women were in social contexts that exposed them to female leaders, they were less likely to express automatic stereotypic beliefs about their ingroup (Studies 1 and 2). Second, Study 2 showed that the long-term effect of social environments (women’s college vs. coed college) on automatic gender stereotyping was mediated by the frequency of exposure to women leaders (i.e., female faculty). Third, some academic environments (e.g., classes in male-dominated disciplines like science and math) produced an increase in automatic stereotypic beliefs among students at the coed college but not at the women’s college—importantly, this effect was mediated by the sex of the course instructors. Together, these findings underscore the power of local environments in shaping women’s nonconscious beliefs about their ingroup.”

## Improvements Through Other Means

**Collins 2007**

“[Tackling Unconscious Bias in Hiring Practices: The Plight of the Rooney Rule](#)”. New York University Law Review, 2007. Vol. 82, pg. 870-912.

Rule requiring all job searches for NFL head coaches to include at least one person of color is successful in increasing the number of head coaches of color.

“This Note analyzes the National Football League’s (NFL) 2002 decision to implement an innovative—and controversial—policy aimed at increasing the League’s number of minority head coaches. Designated the “Rooney Rule,” the policy mandates that every NFL team interview at least one minority candidate upon the vacancy of a head coaching position or be subjected to a significant monetary fine. Despite ongoing allegations that it promotes tokenism and is a form of reverse discrimination, the Rule has reached uncharted success. While other professional sports with large minority populations (e.g., the National Basketball Association) have succeeded in integrating their head coaching positions over the past twenty years without analogous action, this Note argues that the pre–Rooney Rule NFL hiring process remained relatively static because decisionmakers unwittingly held (and often still hold) archaic biases regarding the intellectual ability of minority candidates to handle the high degree of organizational complexity in football. By deftly traversing the line between “soft” and “hard” variants of affirmative action, the Rule has proven effective because it forces decisionmakers harboring this unconscious bias to expand previously restricted coaching networks and come face-to-face with a candidate they would never have considered otherwise.”

#### **Goldin 2014**

“[A Grand Gender Convergence: Its Last Chapter](#)”. *American Economic Review*, 2014. Vol. 104.4, pg. 1091-1119 Doi: <https://doi.org/10.1257/aer.104.4.1091>

To obtain gender equality in the labor market, the market itself must be restructured.

“The converging roles of men and women are among the grandest advances in society and the economy in the last century. These aspects of the grand gender convergence are figurative chapters in a history of gender roles. But what must the “last” chapter contain for there to be equality in the labor market? The answer may come as a surprise. The solution does not (necessarily) have to involve government intervention and it need not make men more responsible in the home (although that wouldn’t hurt). But it must involve changes in the labor market, especially how jobs are structured and remunerated to enhance temporal flexibility. The gender gap in pay would be considerably reduced and might vanish altogether if firms did not have an incentive to disproportionately reward individuals who labored long hours and worked particular hours. Such change has taken off in various sectors, such as technology, science, and health, but is less apparent in the corporate, financial, and legal worlds.”

#### **Greenwald and Krieger 2006**

“[Implicit Bias: Scientific Foundations](#)”. *California Law Review*, 2006. Vol 94.4, pg. 945-968. Doi: <http://dx.doi.org/doi:10.15779/Z38GH7F>

Good review of implicit bias and analysis of the IAT

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# Type of document

## Study

### Bertrand and Mullainathan 2003

["Are Emily and Greg more employable than Lakisha and Jamal? A field experiment on labor market discrimination"](#). *American Economic Review*, 2004. Vol 94.4, pg. 991-1013. Doi: <http://doi.org/10.1257/0002828042002561>

People with "White" names are more likely to be hired than those with "Black" names.

We study race in the labor market by sending fictitious resumes to help-wanted ads in Boston and Chicago newspapers. To manipulate perceived race, resumes are randomly assigned African-American- or White-sounding names. White names receive 50 percent more callbacks for interviews. Callbacks are also more responsive to resume quality for White names than for African-American ones. The racial gap is uniform across occupation, industry, and employer size. We also find little evidence that employers are inferring social class from the names. Differential treatment by race still appears to still be prominent in the U. S. labor market.

### Booth, Leigh, and Varganova 2010

["Does Racial and Ethnic Discrimination Vary Across Minority Groups? Evidence from a Field Experiment"](#). *Oxford Bulletin of Economics and Statistics*, 2010. Vol. 74, pg. 547-573Doi: <http://dx.doi.org/10.1111/j.1468-0084.2011.00664.x>

Different minorities have unequal hiring rates based on names on applications.

"We conduct a large-scale audit discrimination study to measure labor market discrimination across different minority groups in Australia - a country where one quarter of the population was born overseas. To denote ethnicity, we use distinctively Anglo-Saxon, Indigenous, Italian, Chinese, and Middle Eastern names, and our goal is a comparison across multiple ethnic groups rather than focusing on a single minority as in most other studies. In all cases, we applied for entry-level jobs and submitted a CV showing that the candidate had attended high school in Australia. We find economically and statistically significant differences in callback rates, suggesting that ethnic minority candidates would need to apply for more jobs in order to receive the same number of interviews. These differences vary systematically across groups, with Italians (a more established migrant group) suffering less discrimination than Chinese and Middle Easterners (who have typically arrived more recently). We also explore various explanations for our empirical findings."

### Budig and England 2001

["The Wage Penalty for Motherhood"](#). *American Sociological Review*, 2001. Vol 66, pg. 204-225.

Women with children are paid less than other employees.

“Motherhood is associated with lower hourly pay, but the causes of this are not well understood. Mothers may earn less than other women because having children causes them to (1) lose job experience, (2) be less productive at work, (3) trade off higher wages for mother-friendly jobs, or (4) be discriminated against by employers. Or the relationship may be spurious rather than causal—women with lower earning potential may have children at relatively higher rates. The authors use data from the 1982–1993 National Longitudinal Survey of Youth with fixed-effects models to examine the wage penalty for motherhood. Results show a wage penalty of 7 percent per child. Penalties are larger for married women than for unmarried women. Women with (more) children have fewer years of job experience, and after controlling for experience a penalty of 5 percent per child remains. “Mother-friendly” characteristics of the jobs held by mothers explain little of the penalty beyond the tendency of more mothers than non-mothers to work part-time. The portion of the motherhood penalty unexplained probably results from the effect of motherhood on productivity and/or from discrimination by employers against mothers. While the benefits of mothering diffuse widely—to the employers, neighbors, friends, spouses, and children of the adults who received the mothering—the costs of child rearing are borne disproportionately by mothers.”

#### **Carlsson and Rooth 2007**

“[Evidence of ethnic discrimination in the Swedish labor market using experimental data](#)”. *Labour Economics*, 2007. Vol. 14.4, pg. 716-729. Doi: <http://dx.doi.org/10.1016/j.labeco.2007.05.001>

Different minorities have unequal hiring rates based on names on applications.

“We present evidence of ethnic discrimination in the recruitment process by sending fictitious applications to real job openings. Applications with identical skills were randomly assigned Middle Eastern- or Swedish-sounding names and applications with a Swedish name receive fifty percent more callbacks for an interview.

We extend previous analyses by adding register and interview information on firms/recruiters to the experimental data. We find that male recruiters and workplaces with fewer than twenty employees less often call applications with a Middle Eastern name for an interview.”

#### **Correll, Benard, and Paik 2007**

“[Getting a Job: Is There a Motherhood Penalty?](#)” *American Journal of Sociology*, 2007. Vol. 112 pg. 1297-1338. Doi: <https://doi.org/10.1086/511799>

Female employees are penalized for parenting, but men may benefit from it.

“Survey research finds that mothers suffer a substantial wage penalty, although the causal mechanism producing it remains elusive. The authors employed a laboratory experiment to evaluate the hypothesis that status-based discrimination plays an important role and an audit study of actual employers to assess its real-world implications. In both studies, participants evaluated application materials for a pair of same-gender equally qualified job candidates who differed on parental status. The laboratory

experiment found that mothers were penalized on a host of measures, including perceived competence and recommended starting salary. Men were not penalized for, and sometimes benefited from, being a parent. The audit study showed that actual employers discriminate against mothers, but not against fathers.”

#### **Daguid and Thomas-Hunt 2015**

[“Condoning Stereotyping? How Awareness of Stereotyping Prevalence Impacts Expression of Stereotypes”](#). *Journal of Applied Psychology*, 2015. Vol. 100.2, pg. 343-339. Doi: <https://doi.org/10.1037/a0037908>

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long-term effect of social environments (women's college vs. coed college) on automatic gender stereotyping was mediated by the frequency of exposure to women leaders (i.e., female faculty). Third, some academic environments (e.g., classes in male-dominated disciplines like science and math) produced an increase in automatic stereotypic beliefs among students at the coed college but not at the women's college—importantly, this effect was mediated by the sex of the course instructors. Together, these findings underscore the power of local environments in shaping women's nonconscious beliefs about their ingroup.”

### **Eagly and Karau 2009**

“[Role Congruity Theory of Prejudice Toward Female Leaders](http://dx.doi.org/10.1037/0033-295X.109.3.573)”. *Psychological Review*, 2009. Vol 109.3, pg. 573-598. Doi: <http://dx.doi.org/10.1037/0033-295X.109.3.573>

The perceived incongruity between women and leadership means that female leaders are viewed less favorably than male counterparts, and women are less likely to become leaders.

“A role congruity theory of prejudice toward female leaders proposes that perceived incongruity between the female gender role and leadership roles leads to 2 forms of prejudice: (a) perceiving women less favorably than men as potential occupants of leadership roles and (b) evaluating behavior that fulfills the prescriptions of a leader role less favorably when it is enacted by a woman. One consequence is that attitudes are less positive toward female than male leaders and potential leaders. Other consequences are that it is more difficult for women to become leaders and to achieve success in leadership roles. Evidence from varied research paradigms substantiates that these consequences occur, especially in situations that heighten perceptions of incongruity between the female gender role and leadership roles.”

### **Goldin and Rouse 2000**

“[Orchestrating Impartiality: The Impact of ‘Blind’ Auditions on Female Musicians](#)”. *American Economic Review*, 2000. Vol. 90.4, pg. 715-741.

“Blind” auditions increase number of women hired for orchestras.

“A change in the audition procedures of symphony orchestras--adoption of "blind" auditions with a "screen" to conceal the candidate's identity from the jury--provides a test for sex-biased hiring. Using data from actual auditions, in an individual fixed-effects framework, we find that the screen increases the probability a woman will be advanced and hired. Although some of our estimates have large standard errors and there is one persistent effect in the opposite direction, the weight of the evidence suggests that the blind audition procedure fostered impartiality in hiring and increased the proportion women in symphony orchestras.”

### **Heilman and Hayes 2005**

["No Credit Where Credit is Due: Attributional Rationalization of Women's Success in Male-Female Teams"](https://doi.org/10.1037/0021-9010.90.5.905). *Journal of Applied Psychology*, 2005. Vol. 90.5, pg. 905-916. Doi: <https://doi.org/10.1037/0021-9010.90.5.905>

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#### **Heilman and Okimoto 2007**

["Why are women penalized for success at male tasks?: the implied communality deficit"](https://doi.org/10.1037/0021-9010.92.1.81). *Journal of Applied Psychology*, 2007. Vol 92.1, pgs. 81-92. Doi: <https://doi.org/10.1037/0021-9010.92.1.81>

Women are penalized for succeeding in "male domains" because they are seen as violating gender norms.

"In 3 experimental studies, the authors tested the idea that penalties women incur for success in traditionally male areas arise from a perceived deficit in nurturing and socially sensitive communal attributes that is implied by their success. The authors therefore expected that providing information of communality would prevent these penalties. Results indicated that the negativity directed at successful female managers—in ratings of likability, interpersonal hostility, and boss desirability—was mitigated when there was indication that they were communal. This ameliorative effect occurred only when the information was clearly indicative of communal attributes (Study 1) and when it could be unambiguously attributed to the female manager (Study 2); furthermore, these penalties were averted when communality was conveyed by role information (motherhood status) or by behavior (Study 3). These findings support the idea that penalties for women's success in male domains result from the perceived violation of gender-stereotypic prescriptions."

#### **Heilman and Okimoto 2008**

["Motherhood: a potential source of bias in employment decisions"](https://doi.org/10.1037/0021-9010.93.1.189). *Journal of Applied Psychology*, 2008. Vol. 93.1, pg. 189-98. Doi: <https://doi.org/10.1037/0021-9010.93.1.189>

Bias against mothers seeking promotion

“Results of 2 experimental studies in which job incumbents were said to be applying for promotions to traditionally male positions demonstrated bias against mothers in competence expectations and in screening recommendations. This bias occurred regardless of whether the research participants were students (Study 1) or working people (Study 2). Although anticipated job commitment, achievement striving, and dependability were rated as generally lower for parents than for nonparents, anticipated competence was uniquely low for mothers. Mediation analyses indicated that, as predicted, negativity in competence expectations, not anticipated job commitment or achievement striving, promoted the motherhood bias in screening recommendations; expected deficits in agentic behaviors, not in dependability, were found to fuel these competence expectations. These findings suggest that motherhood can indeed hinder the career advancement of women and that it is the heightened association with gender stereotypes that occurs when women are mothers that is the source of motherhood's potentially adverse consequences.”

### **Niederle and Vesterlund 2007**

“[Do Women Shy Away from Competition? Do Men Compete Too Much?](#)” *The Quarterly Journal of Economics*, 2007. Vol. 112.3, pg. 1067-1101. Doi: <https://doi.org/10.1162/qjec.122.3.1067>

Women avoid competition, while men embrace it.

“We examine whether men and women of the same ability differ in their selection into a competitive environment. Participants in a laboratory experiment solve a real task, first under a noncompetitive piece rate and then a competitive tournament incentive scheme. Although there are no gender differences in performance, men select the tournament twice as much as women when choosing their compensation scheme for the next performance. While 73 percent of the men select the tournament, only 35 percent of the women make this choice. This gender gap in tournament entry is not explained by performance, and factors such as risk and feedback aversion only play a negligible role. Instead, the tournament-entry gap is driven by men being more overconfident and by gender differences in preferences for performing in a competition. The result is that women shy away from competition and men embrace it.”

### **Phelan, Moss-Racusin, and Rudman 2008**

“[Competent Yet Out in the Cold: Shifting Criteria for Hiring Reflect Backlash Toward Agentic Women](#)”. *Psychology of Women Quarterly*, 2008. Vol. 32.4, pg. 406-413. Doi: <https://doi.org/10.1111/j.1471-6402.2008.00454.x>

Bias in hiring against women with agency

“We present evidence that shifting hiring criteria reflects backlash toward agentic (“masterful”) women (Rudman, 1998). Participants (N = 428) evaluated male or female agentic or communal managerial applicants on dimensions of competence, social skills, and hireability. Consistent with past research, agentic women were perceived as highly competent but deficient in social skills, compared with agentic men. New to the present research, social skills predicted hiring decisions more than competence for agentic women; for all other applicants, competence received more weight than social skills. Thus,

evaluators shifted the job criteria away from agentic women's strong suit (competence) and toward their perceived deficit (social skills) to justify hiring discrimination. The implications of these findings for women's professional success are discussed."

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## Statistical study

### Budig and England 2001

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Women with children are paid less than other employees.

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### Cha and Weeden 2014

["Overwork and the Slow Convergence in the Gender Gap in Wages"](#). *American Sociological Review*, 2014. Vol. 79.3, pg. 457-484. Doi: <https://doi.org/10.1177/0003122414528936>

Pay from overtime has increased the gender pay gap.

"Despite rapid changes in women's educational attainment and continuous labor force experience, convergence in the gender gap in wages slowed in the 1990s and stalled in the 2000s. Using CPS data from 1979 to 2009, we show that convergence in the gender gap in hourly pay over these three decades was attenuated by the increasing prevalence of "overwork" (defined as working 50 or more hours per week) and the rising hourly wage returns to overwork. Because a greater proportion of men engage in overwork, these changes raised men's wages relative to women's and exacerbated the gender wage gap by an estimated 10 percent of the total wage gap. This overwork effect was sufficiently large to offset

the wage-equalizing effects of the narrowing gender gap in educational attainment and other forms of human capital. The overwork effect on trends in the gender gap in wages was most pronounced in professional and managerial occupations, where long work hours are especially common and the norm of overwork is deeply embedded in organizational practices and occupational cultures. These results illustrate how new ways of organizing work can perpetuate old forms of gender inequality.”

#### **Levanon, England, and Allison 2009**

“[Occupational Feminization and Pay: Assessing Causal Dynamics Using 1950-2000 U.S. Census Data](#)”. *Social Forces* (The University of North Carolina Press), 2009. Vol. 88.2, pg. 865-892. Doi: <https://doi.org/10.1353/sof.0.0264>

Occupations with a greater number of female employees pay less than others due to devaluation of the labor.

“Occupations with a greater share of females pay less than those with a lower share, controlling for education and skill. This association is explained by two dominant views: devaluation and queuing. The former views the pay offered in an occupation to affect its female proportion, due to employers' preference for men—a gendered labor queue. The latter argues that the proportion of females in an occupation affects pay, owing to devaluation of work done by women. Only a few past studies used longitudinal data, which is needed to test the theories. We use fixed-effects models, thus controlling for stable characteristics of occupations, and U.S. Census data from 1950 through 2000. We find substantial evidence for the devaluation view, but only scant evidence for the queuing view.”

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## **Literature Review/Research Compilation**

#### **Catalyst 2007**

“[The Double-Bind Dilemma for Women in Leadership: Damned if You Do, Doomed if you Don't](#)”. *Catalyst*, 2007. New York, NY. Available from <http://www.catalyst.org/knowledge/double-bind>.

Report on how gender stereotypes affect female leaders

“This report analyzes open-ended answers to survey questions as well as one-on-one interviews to reveal that gender stereotypes can create several predicaments for women leaders. Because they are often evaluated against a “masculine” standard of leadership, women are left with limited and unfavorable options, no matter how they behave and perform as leaders. In particular, three predicaments put women in a double bind and can potentially undermine their leadership as well as their own advancement options:

1. Extreme Perceptions: Women are perceived as too soft or too tough but never just right.

2. The High Competence Threshold: Women leaders face higher standards and lower rewards than men leaders.
3. Competent but Disliked: Women leaders are perceived as competent or liked, but rarely both."

**Jost, Rudman, Blair, Carney, Dasgupta, Glaser, and Hardin 2009**

["The existence of implicit bias is beyond reasonable doubt: A refutation of ideological and methodological objections and executive summary of ten studies that no manager should ignore"](#). *Research in Organizational Behavior*, 2009. Vol. 29, pg. 39-69. Doi: <http://dx.doi.org/10.1016/j.riob.2009.10.001>

Proves implicit bias exists and refutes people who criticize IAT

"In this article, we respond at length to recent critiques of research on implicit bias, especially studies using the Implicit Association Test (IAT). Tetlock and Mitchell (2009) claim that "there is no evidence that the IAT reliably predicts class-wide discrimination on tangible outcomes in any setting," accuse their colleagues of violating "the injunction to separate factual from value judgments," adhering blindly to a "statist interventionist" ideology, and of conducting a witch-hunt against implicit racists, sexists, and others. These and other charges are specious. Far from making "extraordinary claims" that "require extraordinary evidence," researchers have identified the existence and consequences of implicit bias through well-established methods based upon principles of cognitive psychology that have been developed in nearly a century's worth of work. We challenge the blanket skepticism and organizational complacency advocated by Tetlock and Mitchell and summarize 10 recent studies that no manager (or managerial researcher) should ignore. These studies reveal that students, nurses, doctors, police officers, employment recruiters, and many others exhibit implicit biases with respect to race, ethnicity, nationality, gender, social status, and other distinctions. Furthermore—and contrary to the emphatic assertions of the critics—participants' implicit associations do predict socially and organizationally significant behaviors, including employment, medical, and voting decisions made by working adults."

**Long 2014**

["Women, leadership and the 'glass cliff': Research roundup"](#). *Journalist's Resource* (Harvard Kennedy School Shorenstein Center on Media, Politics and Public Policy), 2014. Available from [<http://journalistsresource.org/studies/society/gender-society/women-leadership-glass-cliff-research-roundup>](http://journalistsresource.org/studies/society/gender-society/women-leadership-glass-cliff-research-roundup)

Overview of research on female leadership in the US and a list of articles on the subject

**O'Reilly, Smith, Deakin, and Burchell 2015**

["Equal Pay as a Moving Target: International perspectives on forty-years of addressing the gender pay gap"](#). *Cambridge Journal of Economics*, 2015. Vol. 39.2, pg. 299-317. Doi: <https://doi.org/10.1093/cje/bev010>

Discussing the gender pay gap in the UK, Europe, and Australia

“This paper provides an overview of the key factors impacting upon the gender pay gap in the UK, Europe and Australia. Forty years after the implementation of the first equal pay legislation, the pay gap remains a key aspect of the inequalities women face in the labour market. While the overall pay gap has tended to fall in many countries over the past forty years, it has not closed; in some countries it has been stubbornly resistant, or has even widened. In reviewing the collection of papers that make up this special issue we identify four broad themes with which to group the contributions and draw out the explanations for diverse trends: theoretical and conceptual debates; legal developments and their impacts; wage setting institutions and changing employer demands; and newly emerging pay inequalities between and within educational and ethnic groups. Across the four themes we underline how the trends in the gender pay gap capture the dynamism of inequalities, as the market power of different groups and stakeholders changes over times. Three key dimensions emerge from the papers to provide a framework for future research and policy discourse: the relationship between litigation and bargaining strategies; the interaction between wage-setting institutions and new organisational practices; and the increasing and range of diversity or equality strands competing for equal treatment. We conclude that progress towards closing the gender pay gap will not be easy, will require a collective effort of various actors, and will not be quick.”

#### **Rubery and Grimshaw 2014**

“[The 40-year pursuit of equal pay: a case of constantly moving goalposts](#)”. *Cambridge Journal of Economics*, 2014. Vol. 39.2, pg. 319-343. Doi: <https://doi.org/10.1093/cje/beu053>

Investigation of different techniques for solving the gender pay gap and why the gap persists despite these efforts

“Progress towards equal pay is elusive. This article reviews debates on and prescribed remedies for gender pay equality over the past 40 years of equal pay policy. It looks at pay from four perspectives—the economic, the sociological, the institutional and the organisational—and explores how and why once an apparent remedy for unequal pay is pursued, the goalposts tend to shift. The argument is made that the difficulties in securing long-term progress may be attributed to a number of factors, including the multifaceted nature of pay as a social phenomenon, the challenge of pursuing social objectives in a rapidly changing and fragmenting environment, the need for political will not technical solutions to achieve redistribution and the potential for gender inequalities to re-emerge in new forms.”

#### **Shen 2013**

“[Inequality quantified: Mind the gender gap](#)”. *Nature*, 2013. Vol. 495, pg. 22-24. Doi: <https://doi.org/10.1038/495022a>

Gender gap in the sciences

“Female scientists have made steady gains in recent decades but they face persistent career challenges. US universities and colleges employ far more male scientists than female ones and men earn significantly more in science occupations.”

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## Article/Essay

### Collins 2007

“[Tackling Unconscious Bias in Hiring Practices: The Plight of the Rooney Rule](#)”. New York University Law Review, 2007. Vol. 82, pg. 870-912.

Rule requiring all job searches for NFL head coaches to include at least one person of color is successful in increasing the number of head coaches of color.

“This Note analyzes the National Football League’s (NFL) 2002 decision to implement an innovative—and controversial—policy aimed at increasing the League’s number of minority head coaches. Designated the “Rooney Rule,” the policy mandates that every NFL team interview at least one minority candidate upon the vacancy of a head coaching position or be subjected to a significant monetary fine. Despite ongoing allegations that it promotes tokenism and is a form of reverse discrimination, the Rule has reached uncharted success. While other professional sports with large minority populations (e.g., the National Basketball Association) have succeeded in integrating their head coaching positions over the past twenty years without analogous action, this Note argues that the pre–Rooney Rule NFL hiring process remained relatively static because decisionmakers unwittingly held (and often still hold) archaic biases regarding the intellectual ability of minority candidates to handle the high degree of organizational complexity in football. By deftly traversing the line between “soft” and “hard” variants of affirmative action, the Rule has proven effective because it forces decisionmakers harboring this unconscious bias to expand previously restricted coaching networks and come face-to-face with a candidate they would never have considered otherwise.”

### England 2010

“[The Gender Revolution: Uneven and Stalled](#)”. (Sociologists for Women in Society Feminist Lecture) *Gender and Society*, 2010. Vol. 24.2, pg. 149-166. Doi: <https://doi.org/10.1177/0891243210361475>

Why some women have taken jobs traditionally associated with men, but men have not done the reverse

“In this article, the author describes sweeping changes in the gender system and offers explanations for why change has been uneven. Because the devaluation of activities done by women has changed little, women have had strong incentive to enter male jobs, but men have had little incentive to take on female activities or jobs. The gender egalitarianism that gained traction was the notion that women should have access to upward mobility and to all areas of schooling and jobs. But persistent gender



essentialism means that most people follow gender-typical paths except when upward mobility is impossible otherwise. Middle-class women entered managerial and professional jobs more than working-class women integrated blue-collar jobs because the latter were able to move up while choosing a “female” occupation; many mothers of middle-class women were already in the highest-status female occupations. The author also notes a number of gender-egalitarian trends that have stalled.”

#### **Goldin 2014**

“[Orchestrating Impartiality: The Impact of ‘Blind’ Auditions on Female Musicians](#)”. *American Economic Review*, 2000. Vol. 90.4, pg. 715-741.

“Blind” auditions increase number of women hired for orchestras.

“A change in the audition procedures of symphony orchestras--adoption of "blind" auditions with a "screen" to conceal the candidate's identity from the jury--provides a test for sex-biased hiring. Using data from actual auditions, in an individual fixed-effects framework, we find that the screen increases the probability a woman will be advanced and hired. Although some of our estimates have large standard errors and there is one persistent effect in the opposite direction, the weight of the evidence suggests that the blind audition procedure fostered impartiality in hiring and increased the proportion women in symphony orchestras.”

#### **Greenwald and Krieger 2006**

“[Implicit Bias: Scientific Foundations](#)”. *California Law Review*, 2006. Vol 94.4, pg. 945-968. Doi: <http://dx.doi.org/doi:10.15779/Z38GH7F>

Good review of implicit bias and analysis of the IAT

### **Record of Experiences**

#### **Catalyst 2007**

“[The Double-Bind Dilemma for Women in Leadership: Damned if You Do, Doomed if you Don’t](#)”. *Catalyst*, 2007. New York, NY. Available from <http://www.catalyst.org/knowledge/double-bind>.

Report on how gender stereotypes affect female leaders

“This report analyzes open-ended answers to survey questions as well as one-on-one interviews to reveal that gender stereotypes can create several predicaments for women leaders. Because they are often evaluated against a “masculine” standard of leadership, women are left with limited and unfavorable options, no matter how they behave and perform as leaders. In particular, three predicaments put women in a double bind and can potentially undermine their leadership as well as their own advancement options:

1. Extreme Perceptions: Women are perceived as too soft or too tough but never just right.
2. The High Competence Threshold: Women leaders face higher standards and lower rewards than men leaders.
3. Competent but Disliked: Women leaders are perceived as competent or liked, but rarely both.”

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## Resources

### University Resources

#### Separate department/organization

**Harvard University: Project Implicit**

<https://implicit.harvard.edu/implicit/>

The home of the Implicit Association Test (IAT) and related resources

**King’s College London: Diversity and Inclusion Office**

<http://www.kcl.ac.uk/hr/diversity/bias.aspx>

Offers a program of workshops for all staff and includes a tool-kit for participants

**McGill University: Interdisciplinary Research Network on Discrimination and Inclusion**

<http://www.mcgill.ca/humanrights/network-discrimination-and-inclusion>

Part of the Centre for Human Rights & Legal Pluralism in the Faculty of Law

Combines researchers and community organizers for interdisciplinary projects

Bibliography on Implicit Bias: (almost all law-specific)

[http://www.mcgill.ca/humanrights/files/humanrights/2.4\\_implicit\\_bias\\_.pdf](http://www.mcgill.ca/humanrights/files/humanrights/2.4_implicit_bias_.pdf)

**Ohio State University: Kirwan Institute for the Study of Race and Ethnicity**

<http://kirwaninstitute.osu.edu/>

One of the research and strategic initiatives is implicit bias:

<http://kirwaninstitute.osu.edu/researchandstrategicinitiatives/#implicitbias>

Publishes [\*State of the Science: Implicit Bias Review 2016\*](#)

#### **Rutgers University: Women of Color Scholars program**

<http://wisem.rutgers.edu/WoCS>

Offers publications, organizations, and programs

#### **Ryerson University: Rutgers English Diversity Institute (REDI)**

<http://english.rutgers.edu/redi-home.html>

Mission: “to encourage college juniors and seniors, as well as recent graduates, from diverse cultural, economic, and ethnic backgrounds to consider doctoral study in English.”

#### **Stanford University: Center for the Advancement of Women’s Leadership**

<https://womensleadership.stanford.edu/>

Part of the Clayman Institute for Gender Research. Provides programming and other initiatives “to increase the number of women leaders in education, industry and government.” Website includes a video entitled “[Creating a Level Playing Field](#)” along with a discussion guide.

#### **Texas A&M University: Advance Center**

<https://advance.tamu.edu/>

Includes publications and resources on related topics as well information about the university itself.

“The TAMU ADVANCE Center was established in 2010 to engage in research and evidence-based activities and advocacy to broaden the climate of inclusion for all faculty. The overarching goal of the center... is to build on previous university-wide efforts and further weave the deeply held values of diversity, inclusion, and respect into the culture of our institution.”

#### **University of California, San Francisco: Diversity and Outreach Office**

<https://diversity.ucsf.edu/resources/unconscious-bias>

Unconscious bias resources include videos, studies, IAT information, personal and institutional strategies, links to more information, and training.

### **University of Manchester: Equality and Diversity Office**

<http://www.staffnet.manchester.ac.uk/equality-and-diversity/training/unconscious-bias/>

Offers Training Modules for Diversity in the Workplace and Unconscious Bias

### **University of Michigan: Center for the Education of Women**

<http://www.cew.umich.edu/about/about>

Mission: to advance “diversity and inclusion at the University of Michigan by serving as a resource, voice, and advocate to empower women and nontraditional students.”

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## **Academic Resources Unaffiliated with Universities**

### **American Association of University Women**

<http://www.aauw.org/>

Report produced by AAUW

Produced a report entitled “[Solving the Equation: The Variables for Women’s Success in Engineering and Computing](#)” discussing the number of women in these fields and ways to improve this

### **Equity Challenge Unit**

<http://www.ecu.ac.uk/>

A UK organization “advancing equality and diversity in universities and colleges

Produce the “[Unconscious Bias and Higher Education](#)” pamphlet

### **Implicit Bias & Philosophy International Research Project**

<http://www.biasproject.org/>

A project bringing together psychologists, philosophers, and policy professionals to explore the implications of implicit bias.

### **National Center for Faculty Diversity and Development**

<http://www.facultydiversity.org/>

Independent group of academics and institutions that offers workshops, training, and mentoring

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## Literature

**AAUW: *Solving the Equation: The Variables for Women's Success in Engineering and Computing***

<http://www.aauw.org/research/solving-the-equation/>

"More girls than ever before are studying and excelling in science and mathematics. Yet the dramatic increase in girls' educational achievements in these fields has not been matched by similar increases in the numbers of women working as engineers and computing professionals. The report *Solving the Equation: The Variables for Women's Success in Engineering and Computing* takes a closer look at the two STEM fields where the jobs are but women aren't and advises what we can do to add women."

**APA guide for women and minorities: *Surviving and Thriving in Academia***

<http://www.apa.org/pi/oema/resources/brochures/surviving.aspx>

"The guide is designed to highlight critical career milestones so that women and ethnic minorities can prepare to meet these academic challenges ... This guide has three major goals. One goal is to assist new PhDs who are women and/or ethnic minorities in seeking and selecting jobs that effectively complement their personal mix of skills and career goals. The second goal is to help women and ethnic minority faculty members maximize their chances of gaining promotion and tenure. A final goal is to identify strategies to support members of underrepresented groups as they encounter emotional and strategic challenges that may occur if they are denied tenure or promotion."

**ECU: *Unconscious Bias and Higher Education***

<http://www.ecu.ac.uk/publications/unconscious-bias-in-higher-education/>

Produced by Equity Challenge Unit, [Unconscious Bias and Higher Education](#) is a literature review that "aims to help higher education institutions to understand unconscious bias, and discover how to reduce its impact."

**McGill University: Bibliography on law-related implicit bias**

[http://www.mcgill.ca/humanrights/files/humanrights/2.4\\_implicit\\_bias\\_.pdf](http://www.mcgill.ca/humanrights/files/humanrights/2.4_implicit_bias_.pdf)

Selected bibliography on implicit bias produced by the Centre for Human Rights and Legal Pluralism in the Faculty of Law at McGill University.

**Ohio State University: *State of the Science: Implicit Bias Review 2016***

<http://kirwaninstitute.osu.edu/researchandstrategicinitiatives/#implicitbias>

[\*State of the Science: Implicit Bias Review 2016\*](#) is a pamphlet produced by the Kirwan Institute for the Study of Race and Ethnicity at The Ohio State University.

**Robyn Magalit Rodriguez (UC Davis): *Resources for Women of Color Faculty***

<http://us5.campaign-archive2.com/?u=38b49cd9ee1efc1e751e745e9&id=01a3938912&e=e21287a40a>

Dr. Robyn Magalit Rodriguez is an Associate Professor of Asian American Studies at UC Davis. She produced this list of resources as part of a larger initiative focused on community building. She writes of that project, "It was important for us to simply be able to break bread with one another and have a safe space to commiserate about our shared experiences of racism and sexism from the aggressive hostility of conservative white students to the subtle, patronizing treatment by our 'color-blind,' 'progressive' white colleagues."

**Stanford University: Encyclopedia of Philosophy entry on implicit bias**

<http://plato.stanford.edu/entries/implicit-bias/>

This encyclopedia entry addresses "a host of metaphysical, epistemological, and ethical questions about implicit bias", rather than focusing on psychological approaches.

**University of Toronto: *Gender Equity and Pathways to Leadership***

<http://www.faculty.utoronto.ca/reports/>

Produced by the Office of the Vice Provost, Faculty and Academic Life at the University of Toronto, [this document](#) discusses "Women in the Tenure Stream at the University of Toronto (2004-05 and 2015-15)".

**University of Wisconsin: *Reviewing Applicants: Research on Bias and Assumptions***

[https://wiseli.engr.wisc.edu/docs/BiasBrochure\\_3rdEd.pdf](https://wiseli.engr.wisc.edu/docs/BiasBrochure_3rdEd.pdf)

A short brochure on implicit bias, produced by the [Women in Science & Engineering Leadership Institute](#) at the University of Wisconsin-Madison.

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## Training

**AAMC: *What You Don't Know: The Science of Unconscious Bias and What To Do About it in the Search and Recruitment Process* (free online seminar)**

[https://www.aamc.org/members/leadership/catalog/178420/unconscious\\_bias.html](https://www.aamc.org/members/leadership/catalog/178420/unconscious_bias.html)

A free online seminar, “created for academic medicine audiences, is designed to acquaint search committees and others with this research as one step toward mitigating the effects of unconscious bias.”

**Harvard University: Project Implicit**

<https://implicit.harvard.edu/implicit/>

The home of the Implicit Association Test (IAT) and related resources

**King's College London: Diversity and Inclusion Office**

<http://www.kcl.ac.uk/hr/diversity/bias.aspx>

The office provides workshops for staff, as well as tool-kits and links to other resources. The university has also “made attendance at unconscious bias training mandatory for all academics (Senior Lecturer and above) and all Professional Services Staff (Grade 7 and above).”

**University of California, San Francisco: Diversity and Outreach Office**

<https://diversity.ucsf.edu/resources/unconscious-bias>

The office’s website includes pages on the science behind unconscious bias, personal and institutional strategies, and training workshops.

**University of Manchester: Equality and Diversity Office**

<http://www.staffnet.manchester.ac.uk/equality-and-diversity/training/unconscious-bias/>

The office offers unconscious bias training for its employees.

## Miscellaneous

**Lack of hiring of faculty of color (blog post)**

<http://hechingerreport.org/five-things-no-one-will-tell-colleges-dont-hire-faculty-color/>

*The five things no one will tell you about why colleges don't hire more faculty of color* is a blog post written by Marybeth Gasman, a professor of higher education in the graduate school of education at the University of Pennsylvania. She is also the director of the Penn Center for Minority Serving Institutions.

#### **Life in academia for POCs (blog)**

<https://writtenunwritten.wordpress.com/>

*Written/Unwritten: Diversity and the Hidden Truths of Tenure* is a blog written by English professor Patricia Matthew of Montclair State University.

“The purpose of this blog is to collect news articles and op-ed pieces focused on the issue of diversity, affirmative action, and tenure cases under dispute.”

#### **Writing a diversity statement (blog post)**

<http://getalifephd.blogspot.ca/2016/09/how-to-write-effective-diversity.html>

*How to Write an Effective Diversity Statement for a Faculty Job Application* is a blog post written by Tanya Maria Golash-Boza, an assistant professor of sociology and American studies at the University of Kansas. She provides pointers for job candidates on how to write diversity statements.

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## **Other Resources**

### **Legislation**

#### **CRC guidelines to reduce bias in recommendation letters (Canada)**

<http://www.hwest.ca/university-affairs-new-crc-guidelines-aim-to-reduce-unconscious-hiring-bias-against-women/>

#### **Fact Sheet (USA)**

<https://www.whitehouse.gov/the-press-office/2015/09/27/fact-sheet-promoting-gender-equality-and-womens-empowerment>

This statement describes all of the recent government initiatives for gender equality.

#### **Programme for Women Professors (Germany)**



<http://www.spiegel.de/international/germany/sexism-in-germany-universities-rewarded-for-hiring-women-professors-a-576238.html>

Germany launched the *Programme for Women Professors* in 2007. It appears to have been quite successful.

## **Title IX (USA)**

[http://www2.ed.gov/about/offices/list/ocr/docs/tix\\_dis.html](http://www2.ed.gov/about/offices/list/ocr/docs/tix_dis.html)

“The U.S. Department of Education’s Office for Civil Rights (OCR) enforces, among other statutes, Title IX of the Education Amendments of 1972. Title IX protects people from discrimination based on sex in education programs or activities that receive Federal financial assistance. Title IX states that:

No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance.”

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## **Organizations**

### **Center for American Progress**

<https://www.americanprogress.org/about/mission/>

“The Center for American Progress is an independent nonpartisan policy institute that is dedicated to improving the lives of all Americans, through bold, progressive ideas, as well as strong leadership and concerted action.” Some of the issues it deals with are discrimination based on gender, race, ability, and sexuality.

### **Google**

<https://rework.withgoogle.com/subjects/unbiasing/>

Google has created a resource for understanding unconscious bias, including a [bibliography on the science](#), videos, workshop guides, and other information.

## **Training**

### **Google**

<https://rework.withgoogle.com/guides/?subject=5664248772427776>

Google offers a set of guides to help combat unconscious bias.

## Studies and Literature

**Annotated bibliography of gender bias studies in academia (open, public Google Doc)**

<https://docs.google.com/document/d/1QRcQU4RSizlu-HxDY2uZxYp4EmYslmvm9BMtcd-RUis/edit>

**CDO Insights – Diversity Best Practices: *Proven Strategies to Addressing Unconscious Bias in the Workplace***

<http://www.cookross.com/docs/UnconsciousBias.pdf>

Pamphlet produced by Cook Ross, Inc.

CDO Insights Vol 2, Issue 5, August 2008

## Council of Canadian Academies 2012

[“Strengthening Canada’s Research Capacity: The Gender Dimension – The Expert Panel on Women in University Research”](#). 2012.

“Question: What policies and what societal, cultural, and institutional, economic, and/or other relevant factors influence the career trajectory of women researchers in Canadian universities and underlie gender disparities observed in Canadian university researcher’s statistical profile, by discipline area, rank, duty/position/stature, salary, tenure, research funding and or/any other relevant indicators?”

“The major findings from the statistical profile are:

In general, the Canadian profile is similar to that of other economically advanced nations.

Women’s progress in Canadian universities is uneven and dependent on discipline and rank.

The higher the rank, the lower the percentage of women in comparison to men.

The key factors determined by the Panel that impact the career paths of women start early in life with stereotypes that define roles and expectations, followed by a lack of knowledge about requisites for potential career paths, and a lack of role models and mentors. These issues, combined with a rigid tenure track structure, challenges associated with the paid work-family life balance, and the importance of increased support and coordination amongst governments and institutions should be examined if Canada is going to achieve a greater gender balance within academia.”

## Google

<https://rework.withgoogle.com/guides/unbiasing-raise-awareness/steps/understand-the-science/>

A selection of articles on the science behind unconscious bias

### **Greenwald and Krieger 2006**

[“Implicit Bias: Scientific Foundations”](#). *California Law Review*, 2006. Vol 94.4, pg. 945-968. Doi: <http://dx.doi.org/doi:10.15779/Z38GH7F>

Good review of implicit bias and analysis of the IAT

### **Jost, Rudman, Blair, Carney, Dasgupta, Glaser, and Hardin 2009**

[“The existence of implicit bias is beyond reasonable doubt: A refutation of ideological and methodological objections and executive summary of ten studies that no manager should ignore”](#). *Research in Organizational Behavior*, 2009. Vol. 29, pg. 39-69. Doi: <http://dx.doi.org/10.1016/j.riob.2009.10.001>

Proves implicit bias exists and refutes people who criticize IAT

“In this article, we respond at length to recent critiques of research on implicit bias, especially studies using the Implicit Association Test (IAT). Tetlock and Mitchell (2009) claim that “there is no evidence that the IAT reliably predicts class-wide discrimination on tangible outcomes in any setting,” accuse their colleagues of violating “the injunction to separate factual from value judgments,” adhering blindly to a “statist interventionist” ideology, and of conducting a witch-hunt against implicit racists, sexists, and others. These and other charges are specious. Far from making “extraordinary claims” that “require extraordinary evidence,” researchers have identified the existence and consequences of implicit bias through well-established methods based upon principles of cognitive psychology that have been developed in nearly a century's worth of work. We challenge the blanket skepticism and organizational complacency advocated by Tetlock and Mitchell and summarize 10 recent studies that no manager (or managerial researcher) should ignore. These studies reveal that students, nurses, doctors, police officers, employment recruiters, and many others exhibit implicit biases with respect to race, ethnicity, nationality, gender, social status, and other distinctions. Furthermore—and contrary to the emphatic assertions of the critics—participants’ implicit associations do predict socially and organizationally significant behaviors, including employment, medical, and voting decisions made by working adults.”

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