

# Gender in PER: A Retrospective

Laura McCullough  
University of Wisconsin-Stout  
Physics Department

# Outline

- ◆ Gender in PER
- ◆ AAPT meetings
- ◆ TPT articles
- ◆ AJP articles
- ◆ PRST-PER articles
- ◆ Conceptual tests
- ◆ Author info
- ◆ Semantics

# Gender in PER

- ◆ How does gender interact with physics learning and the physics classroom?

# Caveats

- ◆ not a Resource Letter
- ◆ focus on AAPT resources
- ◆ sense of history

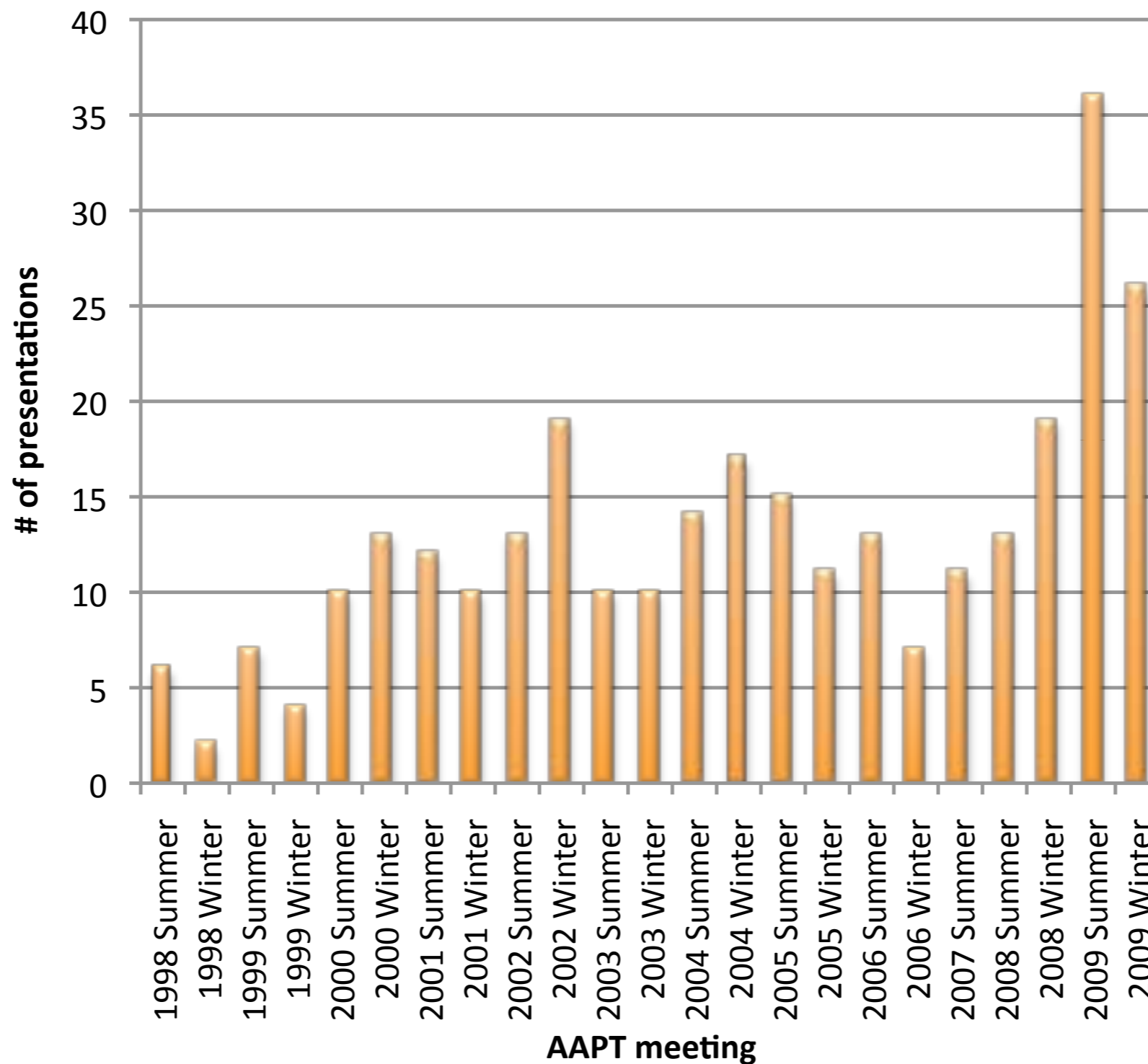
# Humble beginnings

- ◆ 1996 AAPT meeting:  
gender disparities on the FCI

# AAPT talks-general gender

- ◆ Abstract archives online from 1998
- ◆ key terms:
  - ◆ gender: 182 entries
  - ◆ diversity: 56 entries
  - ◆ women: 180 entries
  - ◆ without duplicates: 333 entries

# # of Gender Presentations at AAPT meetings

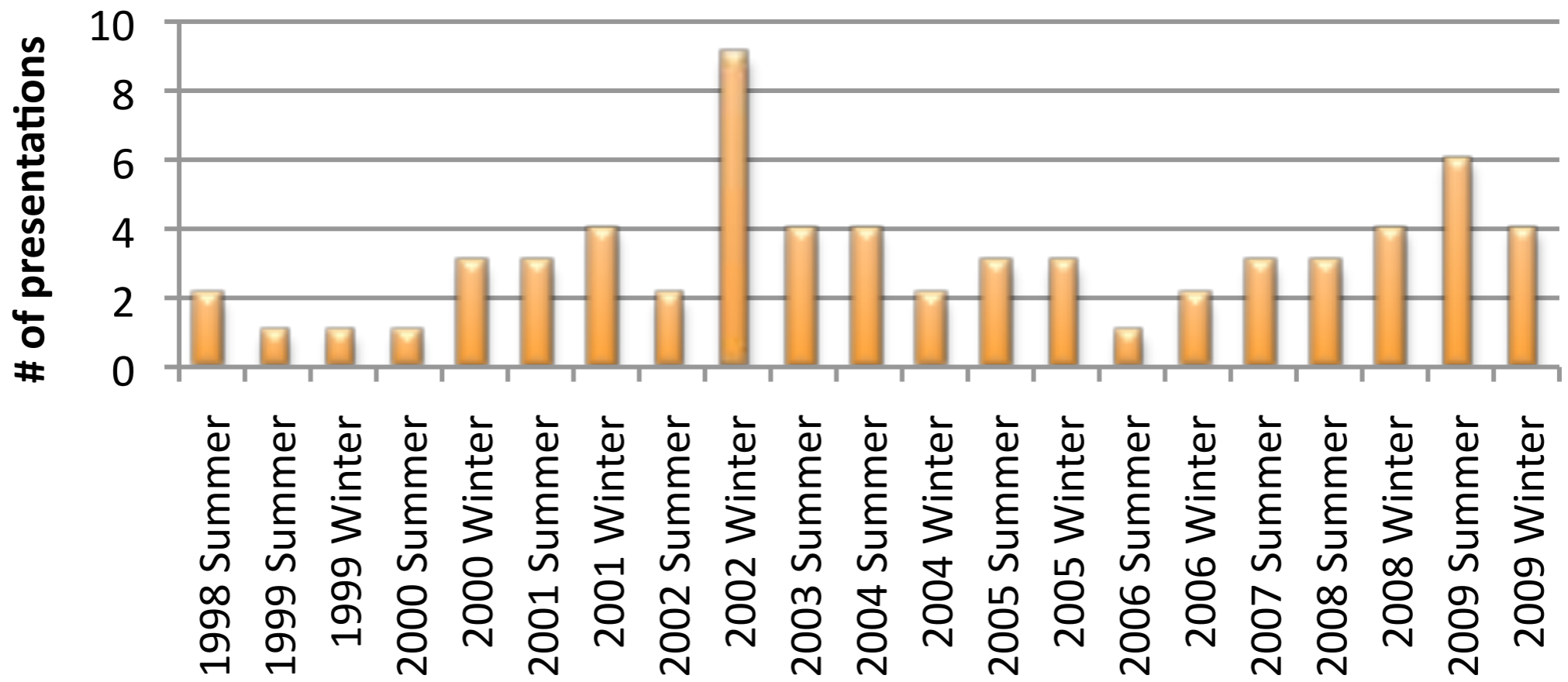


# Gender in PER at AAPT

- ◆ approximately 1/4 gender & PER
- ◆ 24 (of 154) in PER sessions



# Gender/PER presentations by meeting



# The Physics Teacher

- ◆ online archives from 1963 - 2010
- ◆ key terms: gender, women, diversity
  - ◆ gender: 30 entries
  - ◆ women: 32 entries
  - ◆ diversity: 0 entries
  - ◆ women OR gender: 53 entries

# TPT: Gender/PER

| Type of article  | Number of articles |
|------------------|--------------------|
| Biography        | 5                  |
| Book review      | 8                  |
| Editorial        | 3                  |
| General Gender   | 14                 |
| Letter to Editor | 9                  |
| PER              | 3                  |
| Resource         | 8                  |
| Total            | 50                 |

# TPT: Gender/PER

- ◆ 1 each in 1998, 2008, 2009
  - ◆ gender diffs in batteries & bulbs
  - ◆ gender diffs in HS experiences affecting undergrads
  - ◆ gender bias in testing

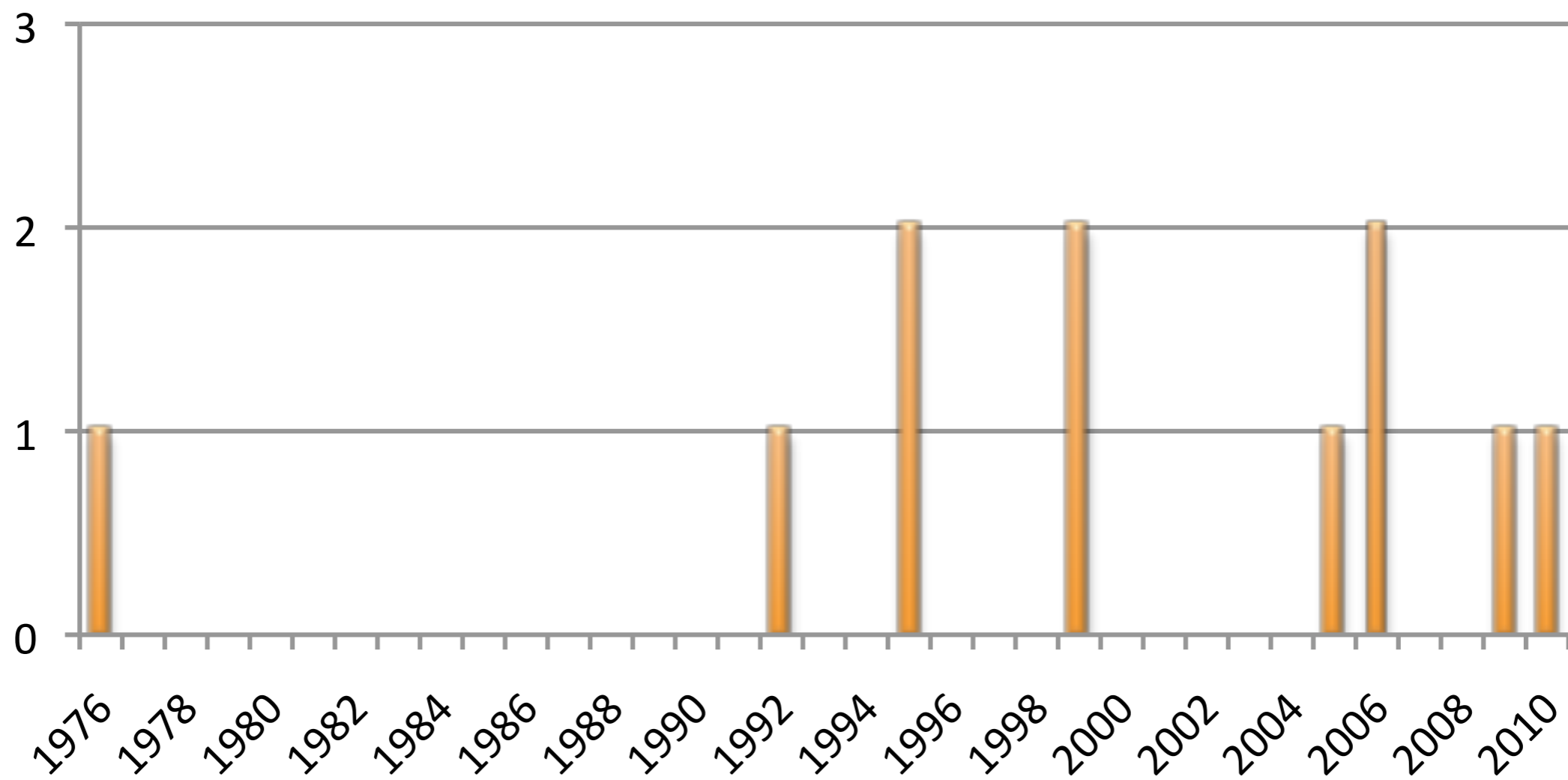
# American Journal of Physics

- ◆ online archive from 1933 - 2010
- ◆ key terms: gender, women, diversity
  - ◆ gender: 15 entries
  - ◆ women: 46 entries
  - ◆ diversity: 12 entries (0 appropriate)
  - ◆ women OR gender: 58 entries

# AJP: Gender/PER

| Type of article  | Number of articles |
|------------------|--------------------|
| Biography        | 4                  |
| Book review      | 6                  |
| Editorial        | 4                  |
| General Gender   | 7                  |
| Letter to Editor | 22                 |
| PER              | 11                 |
| Resource         | 3                  |
| Total            | 57                 |

# # of AJP gender PER articles/year



# AJP Gender/PER

- ◆ 1976: educational materials to promote women's participation
- ◆ 1992: cooperative group learning
- ◆ 1995: student confidence
- ◆ 1995: women in intro astro texts
- ◆ 1999: calculating learning gains



# AJP Gender/PER

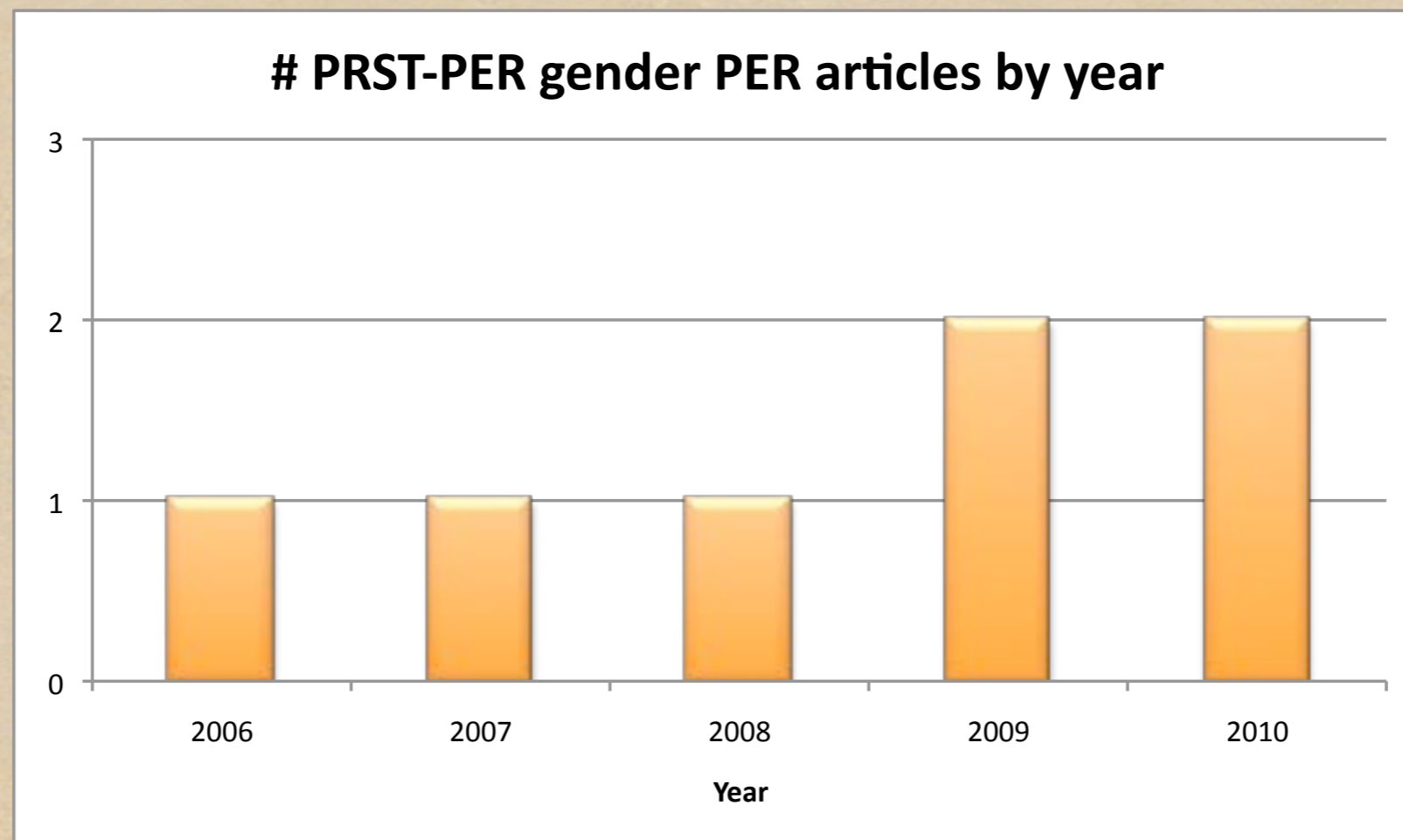
- ◆ 1999: reformed courses
- ◆ 1999: reformed courses
- ◆ 2005: problem solving representations
- ◆ 2006: online homework discussions
- ◆ 2006: reformed teaching
- ◆ 2010: collaborative learning

# Phys. Rev. Sp. T.-PER

- ◆ online archive from 2005 - 2010
- ◆ key terms: gender, women, diversity
  - ◆ gender: 5 entries
  - ◆ women: 3 entries
  - ◆ diversity: 0 entries
  - ◆ women OR gender: 7 entries

# PRST-PER: Gender/PER

- ◆ 7 Gender & PER articles



# PRST-PER Gender/PER

- ◆ 2006: measuring student beliefs
- ◆ 2007: interactive engagement
- ◆ 2008: measuring student beliefs
- ◆ 2009: background factors in gender gap
- ◆ 2009: online homework
- ◆ 2010: reform teaching
- ◆ 2010: factors in gender gap

# Conceptual Tests

- ◆ Force Concept Inventory (1992): no mention of gender
- ◆ Mechanics Baseline Test (1992): no mention of gender

# Conceptual Tests

- ◆ TUG-K (1994): “it was found that the mean for males of 9.5 was significantly better than the 7.2 value for females ”
- ◆ Force & Motion Conceptual Evaluation (1998): no mention of gender

# Conceptual Tests

- ◆ Conceptual Survey of Electricity and Magnetism (2001): no mention of gender
- ◆ DIRECT (2004): “significant differences were found in the averages for males and females with males outperforming females at all levels”

# Attitude Tests

- ◆ MPEX (1997): no mention of gender
- ◆ CLASS (2006): “The responses to nearly half the statements show significant gender differences.”



# PER-Central

- ◆ key terms: gender, women, diversity
  - ◆ gender: 64 entries
  - ◆ women: 30 entries
  - ◆ diversity: 13 entries (7 appropriate)
  - ◆ women OR gender: 64 entries
- ◆ oldest entry from 1980

# Author/Presenter data

- ◆ TPT:
  - ◆ 1998 & 2008: large groups
  - ◆ 2009: solo

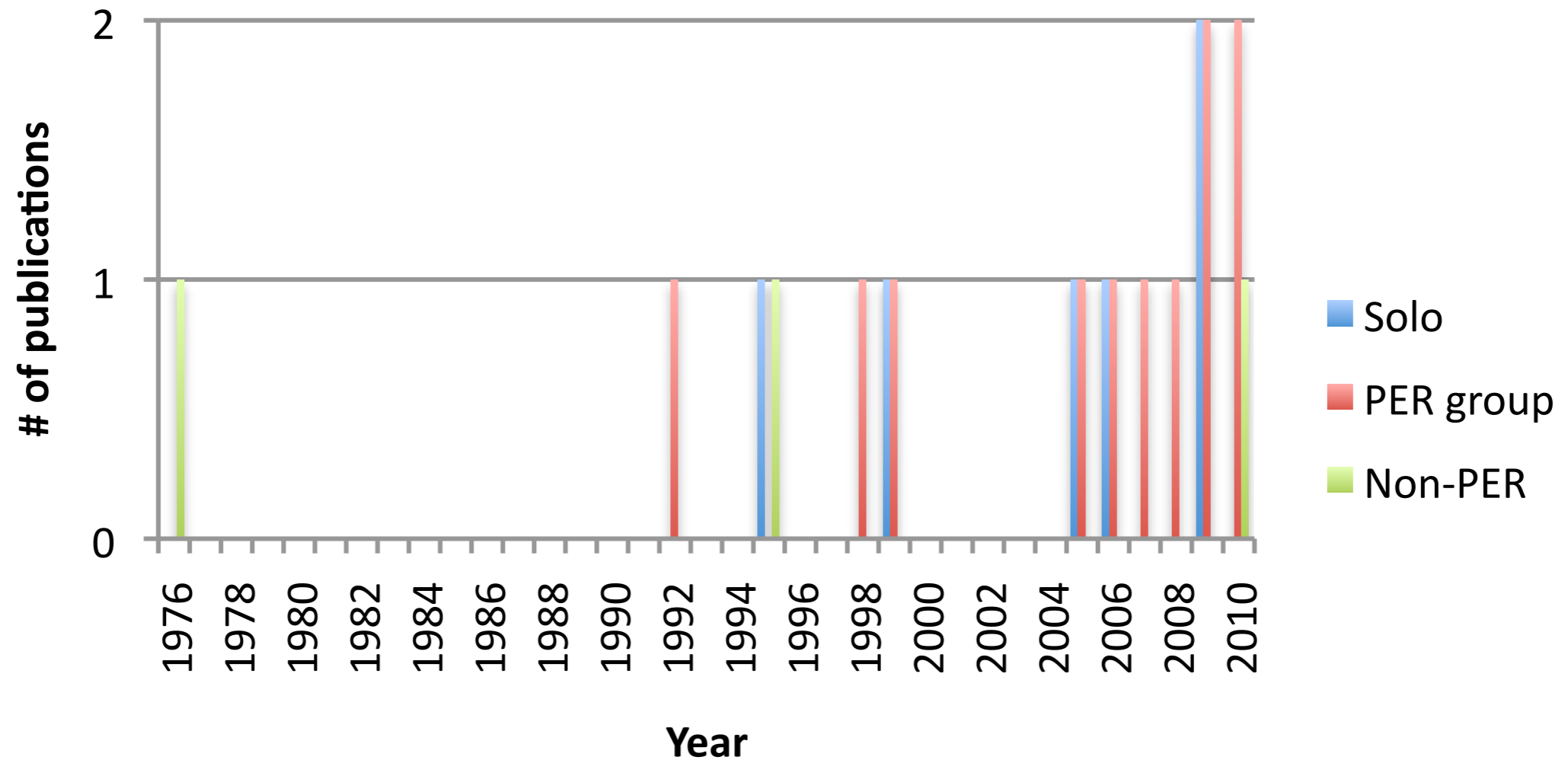
# Author/Presenter data

- ◆ AJP:
  - ◆ 1976, 1995 & 2010: non-PER
  - ◆ 1995, 1999, 2005, 2006: Solo PER researchers
  - ◆ 1992, 1999, 2005, 2009: PER groups

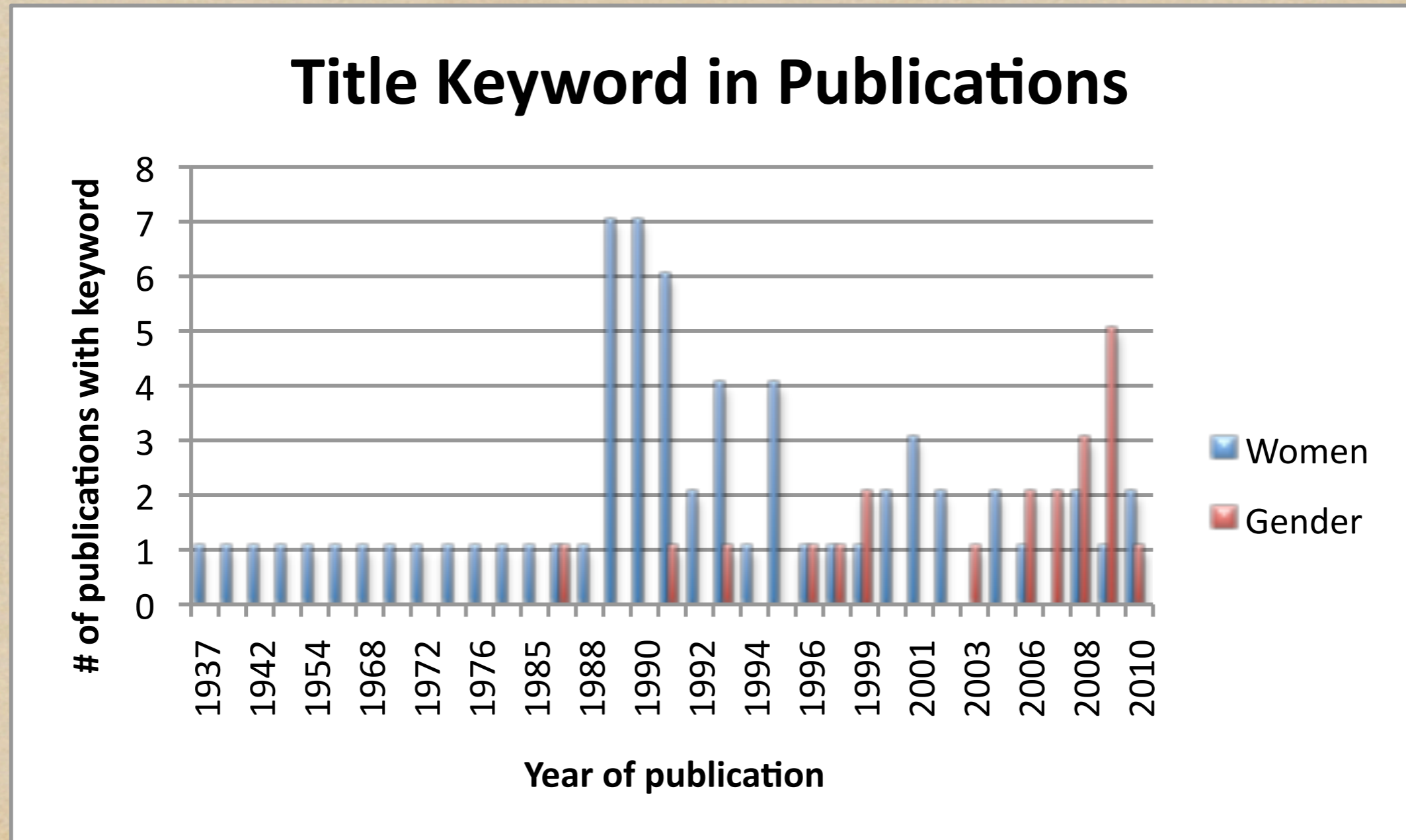
# Author/Presenter data

- ◆ PRST-PER:
  - ◆ 2009: Solo PER researcher
  - ◆ 2006, 2007, 2008, 2009, 2010, 2010:  
PER groups

# Publications by year and source



# “Women” vs. “Gender”



TPT, AJP, and PRST-PER titles

# Gaining Momentum

- ◆ Akira Miyake, Lauren E. Kost-Smith, Noah D. Finkelstein, Steven J. Pollock, Geoffrey L. Cohen and Tiffany A. Ito (2010). Reducing the Gender Achievement Gap in College Science: A Classroom Study of Values Affirmation. Science Vol. 330 no. 6008 pp. 1234-1237

# Conclusions: Gender in PER

- ◆ Definite increase in talks/papers
- ◆ Shift from descriptive to experimental
- ◆ Gaining acceptance & prestige
- ◆ Valued in the PER community



Thank you!

## # of gender/PER articles by year

