

# Gender, Science Anxiety, and Science Attitudes: A Multinational Perspective

# Science Anxiety

A debilitating interaction of emotion--fear, with cognition--science learning.

# Science Anxiety (SA) Questionnaire

- 44 questions
  - 22 science related questions
  - 22 non-science related questions
- students were asked how much they were frightened in performing the activities described in the questionnaire.

- Self reported anxiety:

1

2

3

4

5

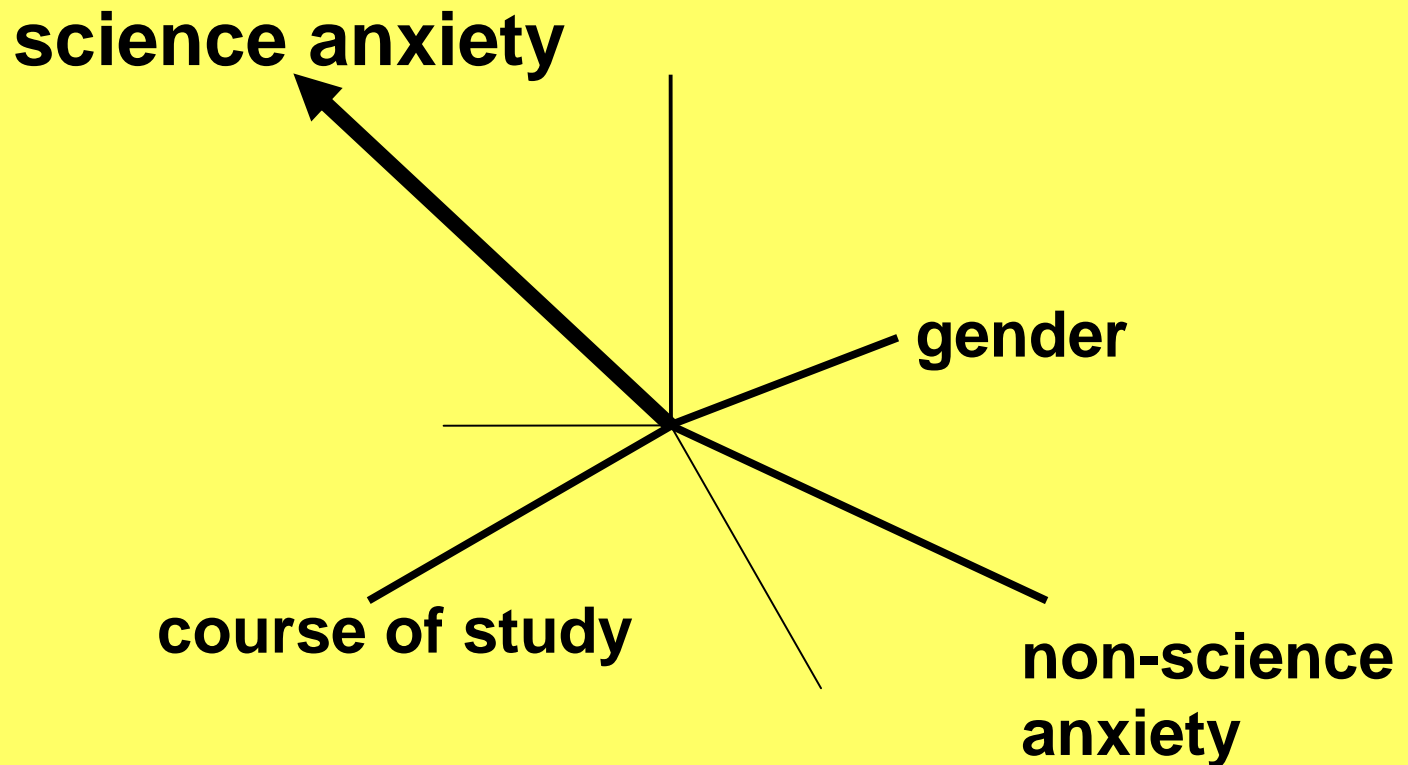
not at all little fair amount much very much

# Science Anxiety Questionnaire Sample Items

- **Asking a question in a science class.**
- **Asking a question in an English Literature class.**
  
- **Focusing the lens on your camera.**
- **Focusing a microscope.**
  
- **Memorizing a chart of historical dates.**
- **Memorizing the names of elements in the periodic table.**

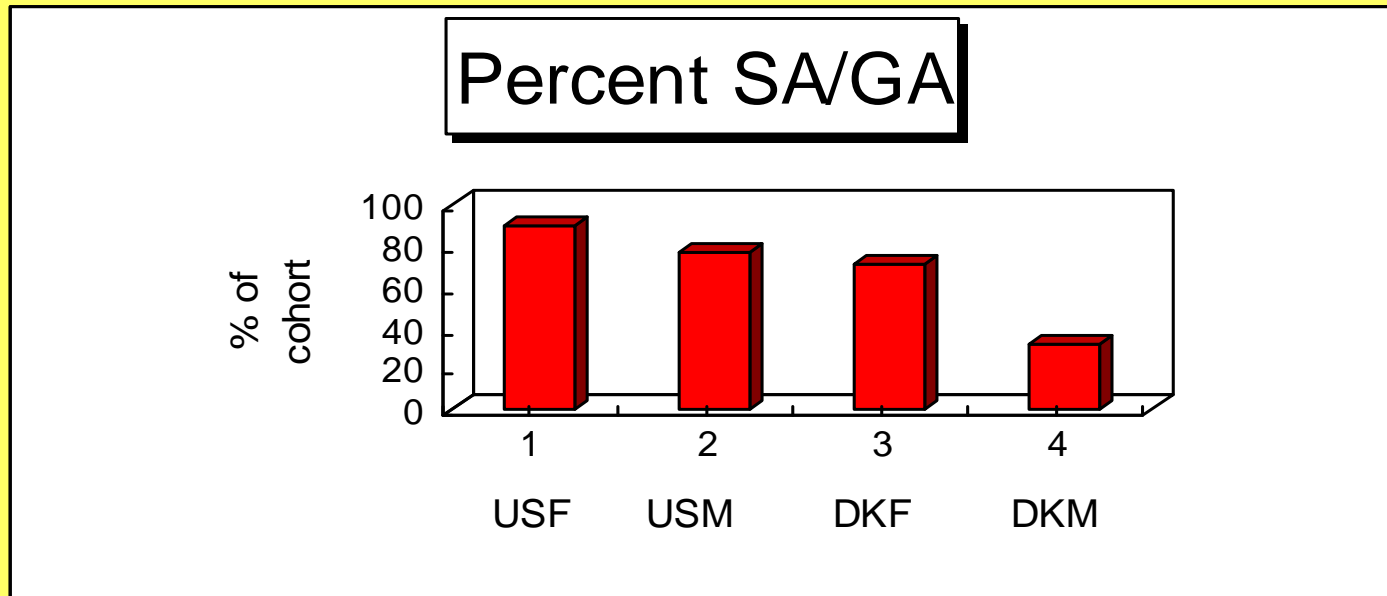
# MULTIPLE REGRESSION ANALYSIS

**Best predictors of science anxiety are non-science anxiety, gender, course of study.**



# ACUTE ANXIETY: ORIGINAL STUDY

## Percent of Science-Anxious Students of Generally-Anxious Samples US & DENMARK



**SA: "Science-Anxious"--students answered any of the 22 science questions "much" or "very much".**

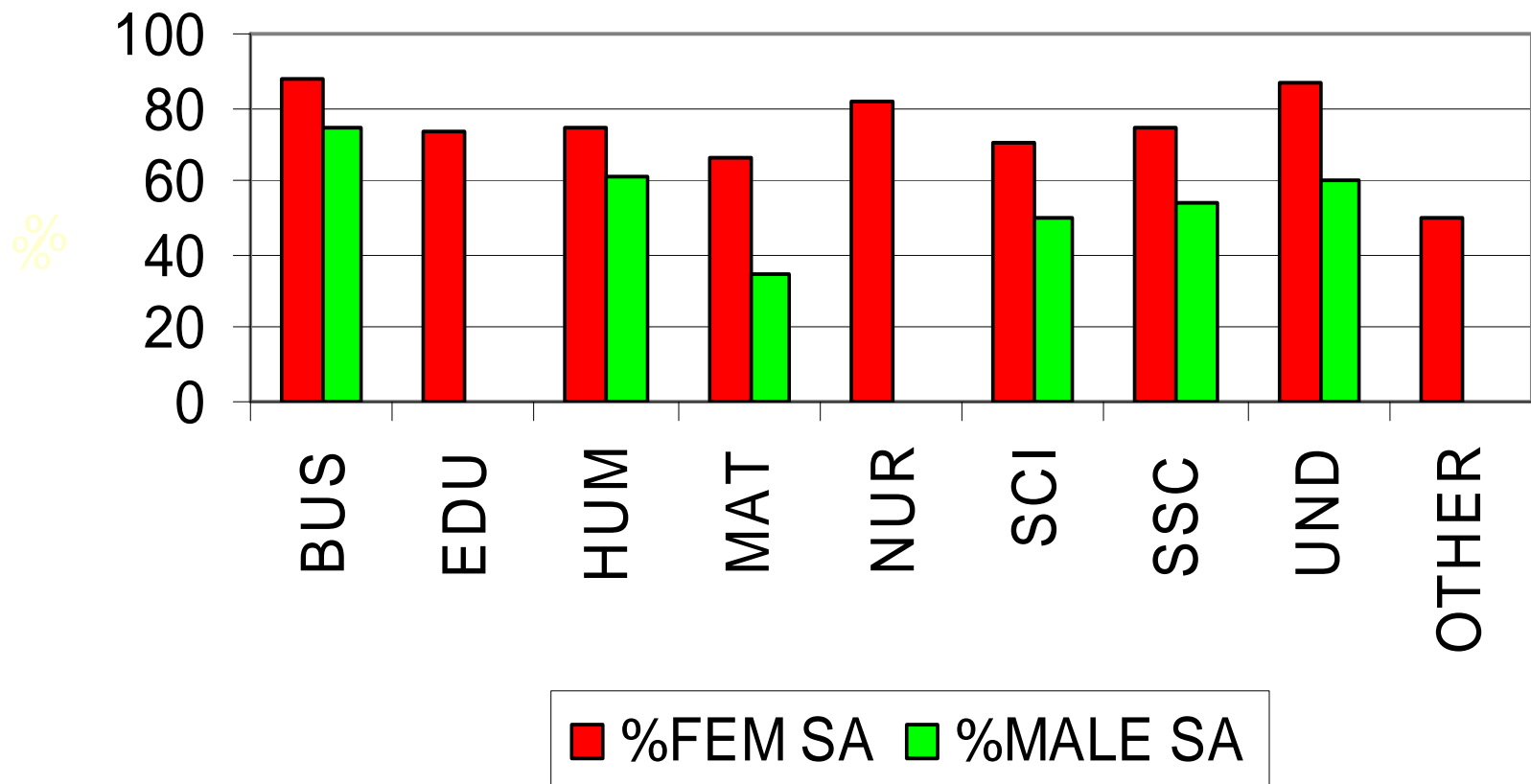
**GA: "Generally-Anxious"--students answered any of the 44 questions "much" or "very much".**

# Changes in Acute Science Anxiety in a Semester of Physics (US)



# Acute Science Anxiety in Science and Non-science Students (US)

**% SA/GA students by gender and course of study**





# DANISH GYMNASIUM REFORM

Physics required for all.

- Pre-reform students of both genders were more science-anxious than post-reform students.
- No gender differences in science anxiety among pre- or post-reform students.
- The level of science anxiety among both pre- and post-reform students was higher than in the 1990's studies.

# Further Observations

US students' results are the same as Danish students': no gender differences in SA/GA.

SA/GA masks separate SA and GA values, which appear to exhibit some gender differences and changes over time. Further study needed.



# **“Attitudes Towards Science” Questionnaire**

**Science is a “level playing-field” in which men and women have equal status and opportunity.**

**(“Traditional” view)**

**Science reflects the social and political values, philosophical assumptions, and intellectual norms of the culture in which it is practiced.**

**(“Moderate constructivist” view.)**

**Science is by its nature hostile to women.**

**(“Radical constructivist” view)**











