



# STRESS IN STUDENTS: THE IMPOSTER SYNDROME

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# WHO AM I?

Catholic elementary & high school

Applied mathematics, Delft University of Technology

Ph.D. Scientific Computing, Stanford

with Ph.D. minor in Mechanical Engineering

Faculty Engineering Science, Auckland, NZ

Faculty Energy Resources Engineering

with appointments in Civil, Mechanical and Computational Mathematics

24 yrs teaching experience in maths/physics

# I AM CONCERNED

Throughout years teaching maths/engineering I observed:

- Significant stresses in majority students  
independent of gender/race
- Severe self-doubt in especially female students
- Frustration with lack of empathy instructors
- Stronger tendency for female students to drop out  
(at all levels)

# TYPICAL STANFORD CASE

Student performed poorly in midterm maths exam

Female comes to office hours and says:

*"This is it. I am really not good enough.*

*I've always been afraid of this. Now I'm sure"*

Male student comes to office hours and says

*"It's your fault I performed poorly. Your test was unfair"*

or

*"Whatever. I will do better next time"*

# NOT LIMITED TO GRAD SCHOOL

Pattern of stress and self-doubt starts early in life

- Anecdotal evidence elementary school  
Role family / teachers
- Anecdotal evidence high school
- Anecdotal evidence undergraduate school
- Backed up by various studies on, e.g., testing

# STANFORD SURVEY

Motivated by talk on stress/battles in Engr311

Conducted via Facebook friends and emailing lists

220 responses in 24 hours (80 male, 140 female)

Biases in population? unknown

Answers >90% from engineering/earth sciences

# SURVEY QUESTIONS

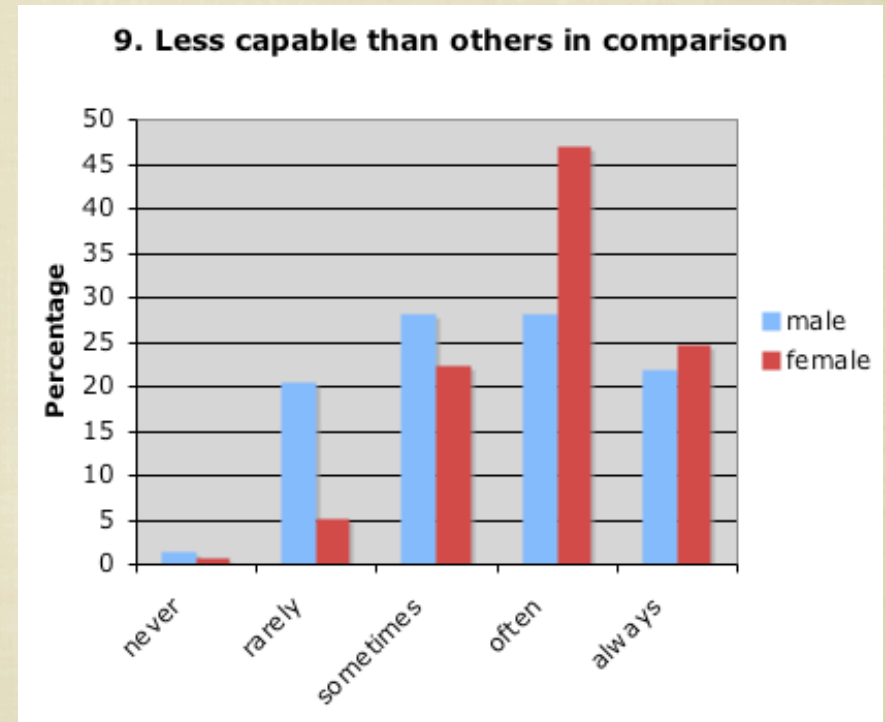
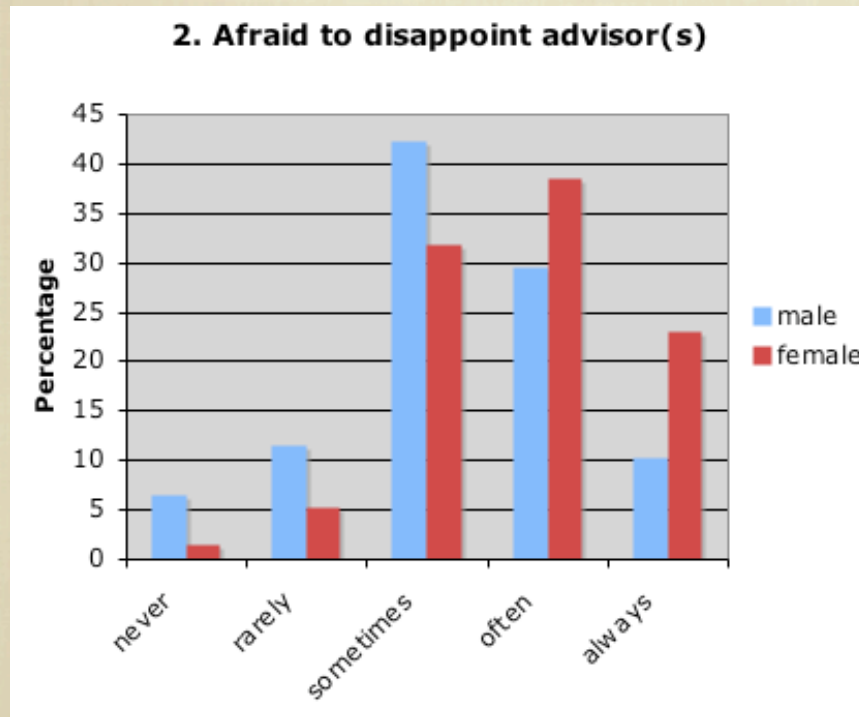
This applies to me never, rarely, sometimes, often or always:

2. I'm afraid of disappointing my advisor(s)
3. I often succeed on a task, even if I'm afraid I will not do well before I undertake it
4. I think it was luck more than talent that got me into grad school
5. I am afraid that my advisor(s) and peers will find out that I am not as capable as they think I am
6. I give the impression that I am more capable than I really am
7. When I get complimented on a job well done, I often feel the person giving the compliment is merely trying to be nice
8. I am afraid that others will discover my lack of ability and/or skills
9. I compare my abilities to those around me and think they are more able than I am
10. (If you answered often/always to any): Do these factors affect your performance at school? What, if anything, can your instructor(s)/advisor(s) do to help you deal better?

# GENERAL STRESS/COMPETITIVENESS

[2] I'm afraid of disappointing my advisor(s)

[9] I compare my abilities to those around me and think they are more able than I am

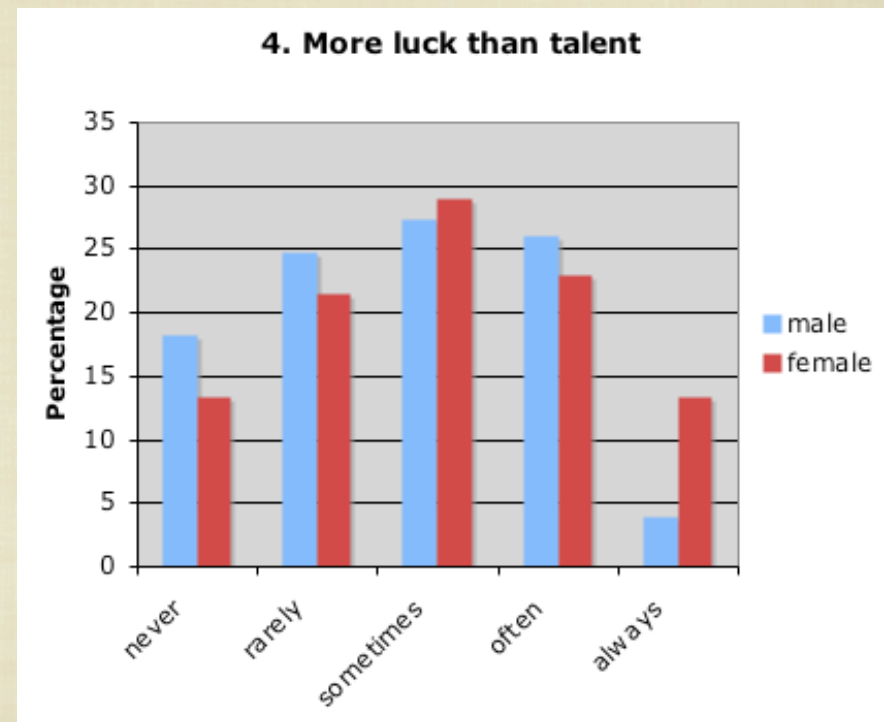
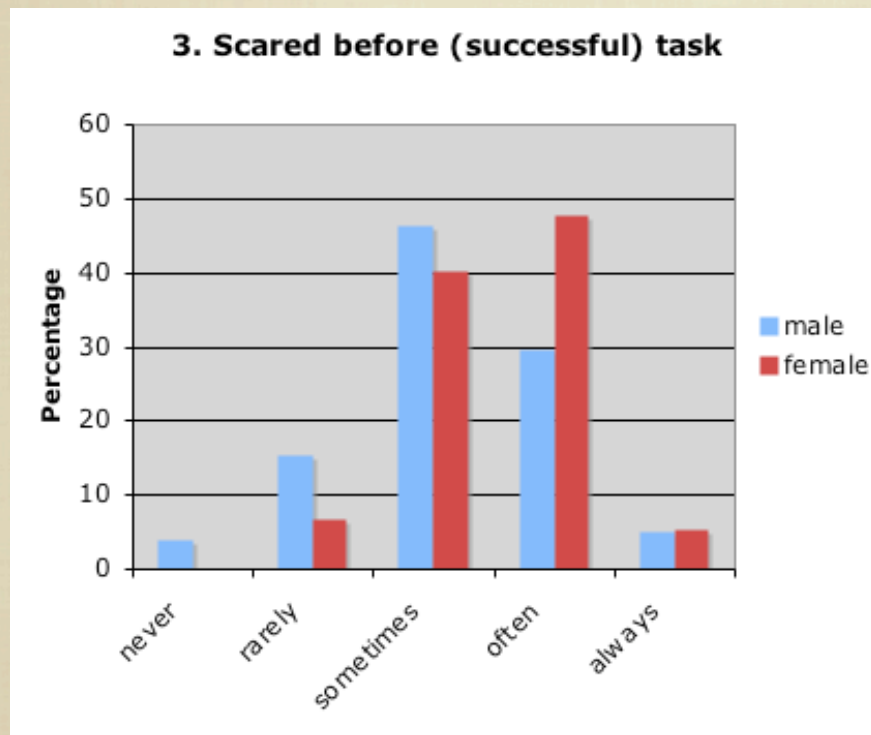




# LOW SELF-ESTEEM (POSSIBLY WITHOUT CAUSE)

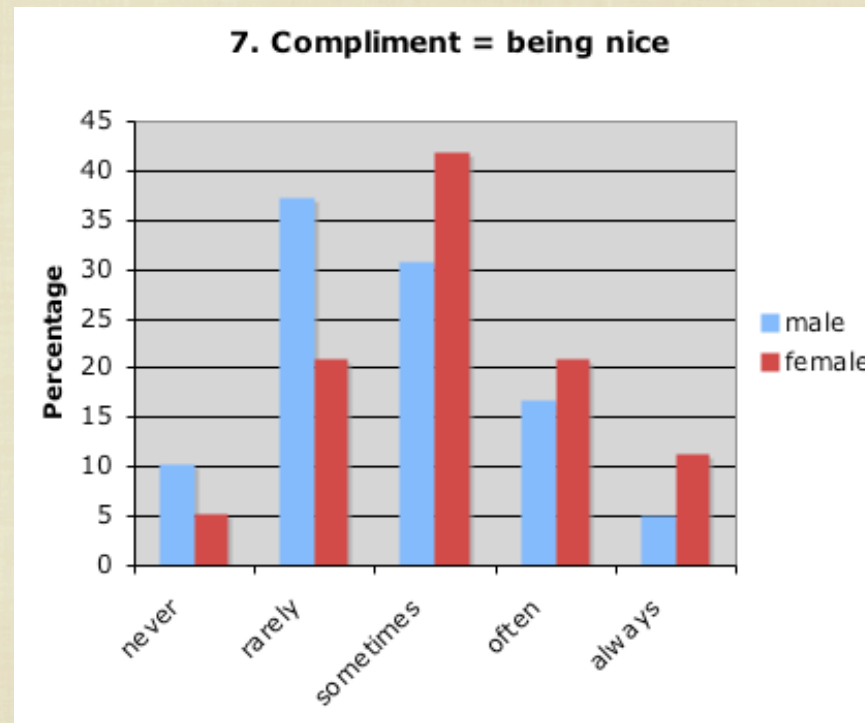
(3) I often succeed on a task, even if I'm afraid I will not do well before I undertake it

(4) I think it was luck more than talent that got me into grad school



# LOW SELF-ESTEEM (POSSIBLY WITHOUT CAUSE)

(7) When I get complimented on a job well done, I often feel the person giving the compliment is merely trying to be nice

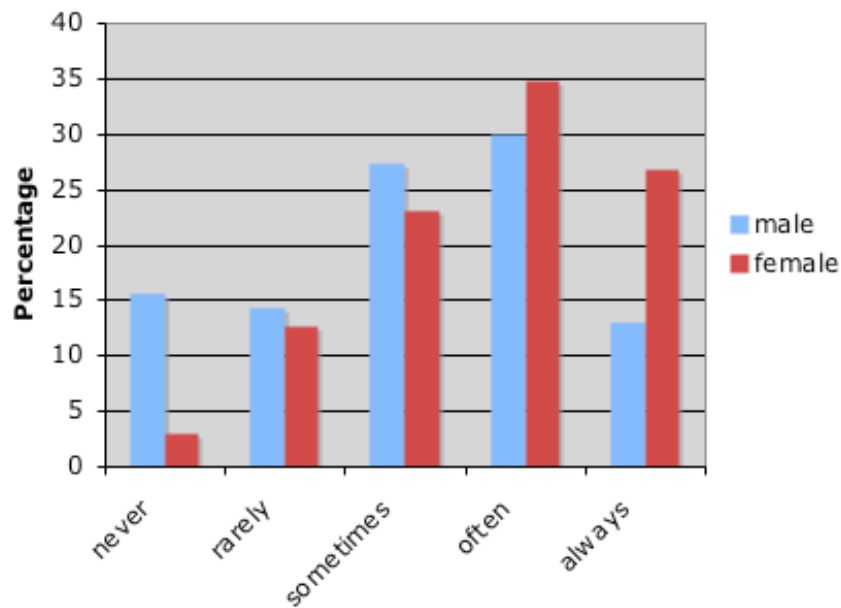


# IMPOSTER SYNDROME

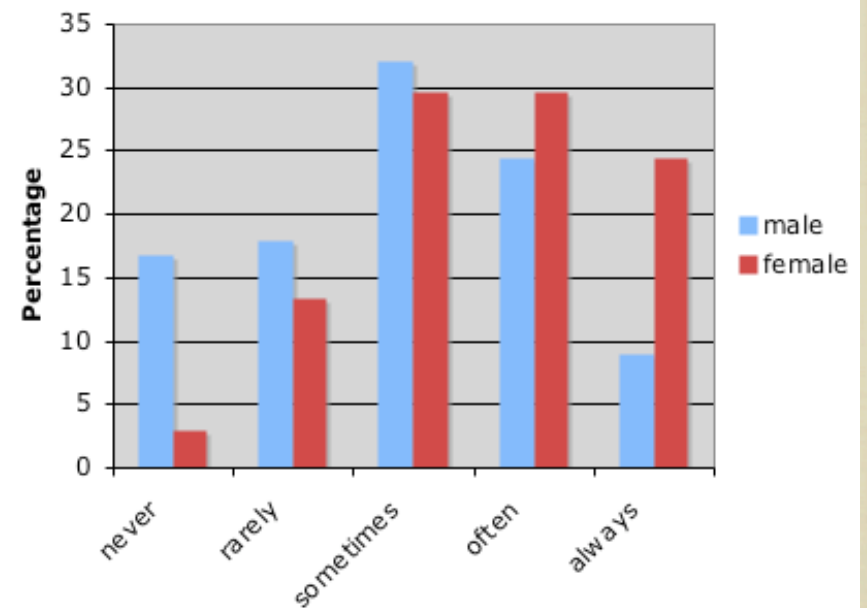
(5) I am afraid that my advisor(s) and peers will find out that I am not as capable as they think I am

(8) I am afraid that others will discover my lack of ability and/or skills

**5. Afraid to be "found out" - 1**



**8. Afraid to be "found out" - 2**



# 10. AFFECTS YOU?

Male: 31 answers - 38%

Female: 87 answers - 62%

(percentages indicative of how many answered “often” or “always” in questions)

## **Male**

52% believes performance was affected negatively

27% believes the issues had positive effects (“work harder”)

21% believes their performance was not affected

Effects mentioned mostly: scared to come forward, avoidance behavior

## **Female**

87% believes performance was affected negatively

7% believes the issues had positive effects (“work harder”)

7% believes their performance was not affected

Effect mentioned mostly: scared to come forward, avoidance behavior, exhaustion, negative impacts on personal life

# 10. CAN ANYTHING BE DONE?

Male: 18 answers - 60% of previous

Female: 60 answers - 70% of previous

## Male

45% believes advisor/mentor/instructor can help

5% believes there is nothing that can be done by anyone

50% believes "I need to do this myself"

## Female

76% believes advisor/mentor/instructor can help

2% believes there is nothing that can be done by anyone

11% does not know

11% believes "I need to do this myself"

# 10. WHAT CAN BE DONE TO HELP?

Male: 18 answers - 60% of previous

Female: 60 answers - 70% of previous

## **Male - frequent suggestions for advisors**

- Give honest and regular feedback
- Give students a sense of importance of their work
- Be more involved

Only a few mentioned: Give regular encouragement

## **Female - frequent suggestions for advisors**

- Set students up for (small) confidence building successes
- Be open about stress, I.S., own failures
- Give positive reinforcement: point out good as well as bad, reassure
- Give regular encouragement
- Give honest and regular feedback

Only a few mentioned: Give students sense of importance of their work

Seen as important to have female mentors/role models and to know that others (not only advisors) suffer from stress

# SUMMARIZING THOUGHTS

Stress is prevalent in both male and female grad students

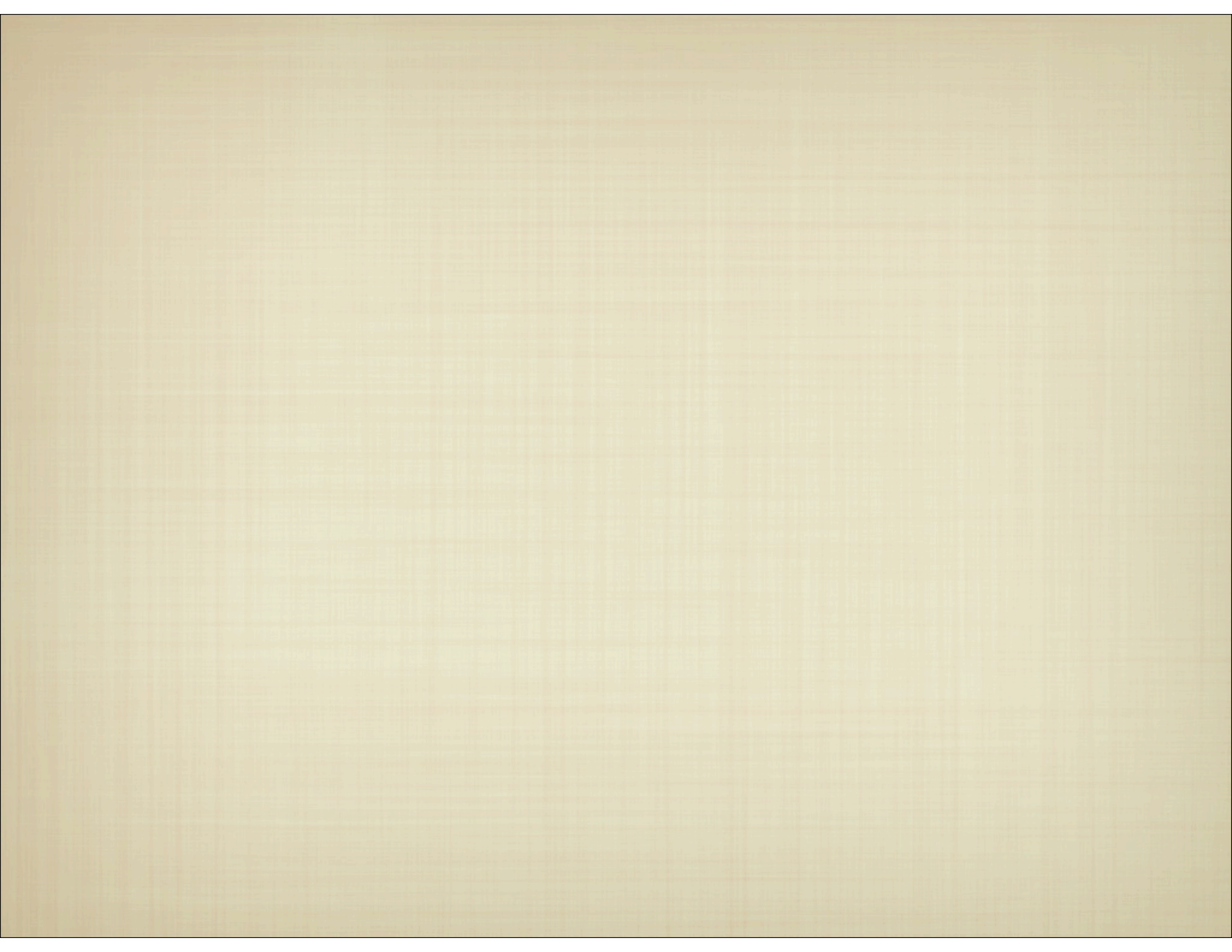
Imposter syndrome / low self esteem stronger in females

These feelings significantly affect well-being & performance

Female students crave for more support & openness

IMHO, probable causes cultural and start at young age

At Stanford, we can fight symptoms, but not prevent illness





(6) I give the impression that I am more capable than I really am

