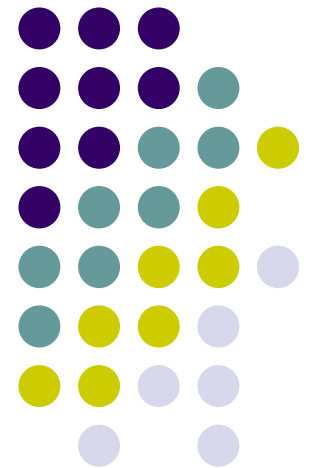


**Ubiquitous and Mobile Computing**  
**CS 528: *Final Project***  
**“DeStress: A Stress Management Tool ”**

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# Stress ?!

## A Look at the High Cost of Stress

Stress and anxiety directly led to Americans taking off 25 days in 2001; substantially more than the 6 days they took off for nonfatal injury and illness.



51% of American employees say they become less productive when they feel stressed.

52% of American workers say they've made a career decision based on stress levels.

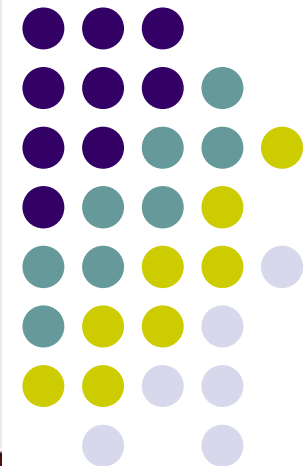
In 2005, 33% of Americans said they would check in with the office while they were on vacation.

10% of medical costs go toward prescription drugs for anxiety-related conditions.

Stress could shrink the brain's hippocampus by 3%, which can impact memory and learning retention.



Stress can cause irritability (45%), fatigue (41%), and dwindling motivation and energy levels (38%).



# Stress cost money, time and energy !



- Stress is estimated to cost American companies more than **\$300** billion a year in health costs [1].
- **50%** of Americans are presently more stressed than years before [2] .
- **55%** of people who work in demanding jobs are stress all the time [3]
  - only **35%** know how to manage stress.



# Can a mobile phone application teach individual how to manage stress?





# Related Work (smartphone)

- Automatic sensing

- Ceja, Enrique, Venet Osmani, and Oscar Mayora. "Automatic Stress Detection in Working Environments from Smartphones' Accelerometer Data: A First Step." *IEEE Journal of Biomedical and Health Informatics IEEE J. Biomed. Health Inform.*(2015): 1. Web.

- Monitoring user usage.

- Bauer, Gerald, and Paul Lukowicz. "Can Smartphones Detect Stress-related Changes in the Behaviour of Individuals?" *2012 IEEE International Conference on Pervasive Computing and Communications Workshops* (2012): pag. Web.

- monitors and promotes

- Lane, Nicholas, Mashfiqui Mohammad, Mu Lin, Xiaochao Yang, Hong Lu, Shahid Ali, Afsaneh Doryab, Ethan Berke, Tanzeem Choudhury, and Andrew Campbell. "BeWell: A Smartphone Application to Monitor, Model and Promote Wellbeing." *Proceedings of the 5th International ICST Conference on Pervasive Computing Technologies for Healthcare*(2011): n. pag. Web



# Related Work (stress reduction)

- Relaxation Training
  - Manzoni, Gian, Francesco Pagnini, Gianluca Castelnuovo, and Enrico Molinari. "Relaxation Training for Anxiety: A Ten-years Systematic Review with Meta-analysis." *BMC Psychiatry* 8.1 (2008): 41. Web.
- Meditation
  - "Mindfulness-Based Stress Reduction, Mindfulness-Based Cognit... : Journal of Psychiatric Practice®." *LWW*. N.p., n.d. Web.
- Deep Breathing
  - "Efficacy of the Controlled Breathing Therapy on Stress: Biological Correlates. Preliminary Study." *ResearchGate*. N.p., n.d. Web.
- Yoga
  - "Yoga Breathing, Meditation, and Longevity." *National Center for Biotechnology Information*. U.S. National Library of Medicine, n.d. Web.
- Music
  - Cervellin, Gianfranco, and Giuseppe Lippi. "From Music-beat to Heart-beat: A Journey in the Complex Interactions between Music, Brain and Heart." *European Journal of Internal Medicine* 22.4 (2011): 371-74. Web

# Methodology



## Gender

- Male
- Female

## Age range

- Below 18
- 18-28
- above 28

Stress can be defined as any negative impact brought on the body by particular circumstances.

Do you consider yourself to be an individual that is usually stressed?

- Definitely yes
- Probably yes
- Might or might not



- Moderately negative

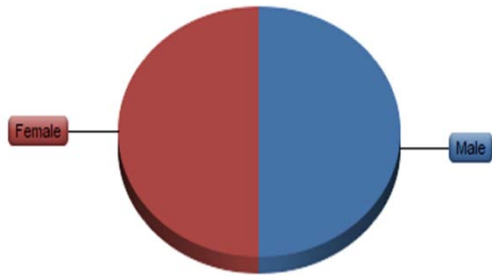
## Do you know how to manage your stress?

- Definitely yes
- Probably yes
- Might or might not
- Probably not
- Definitely not

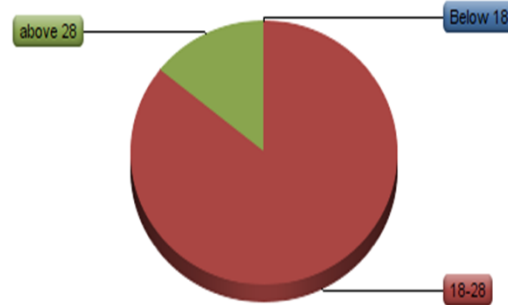
## Would you consider using a mobile application to aid with stress management?

- Definitely yes
- Probably yes
- Might or might not
- Probably not
- Definitely not

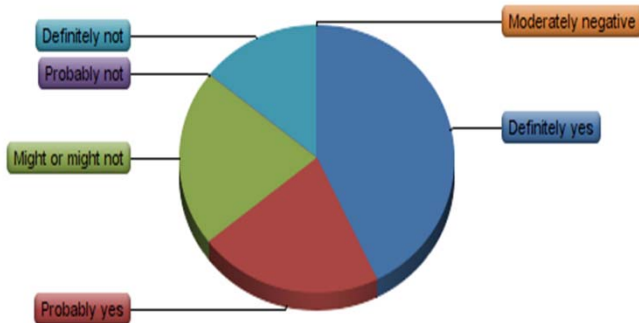
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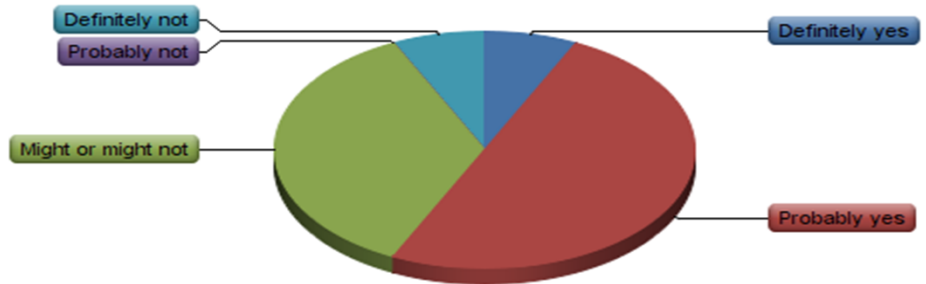
Gender ?



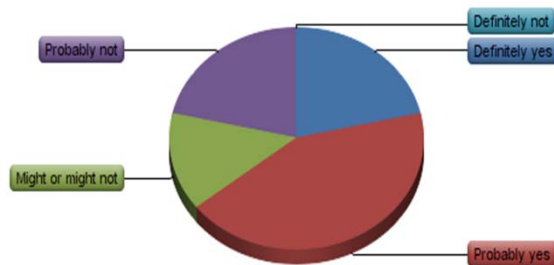
Age range ?



Stressed?



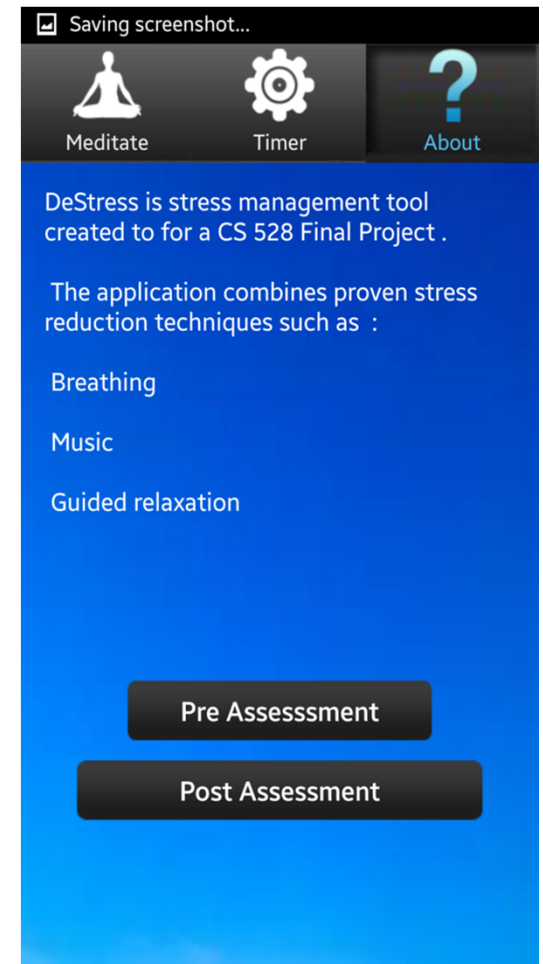
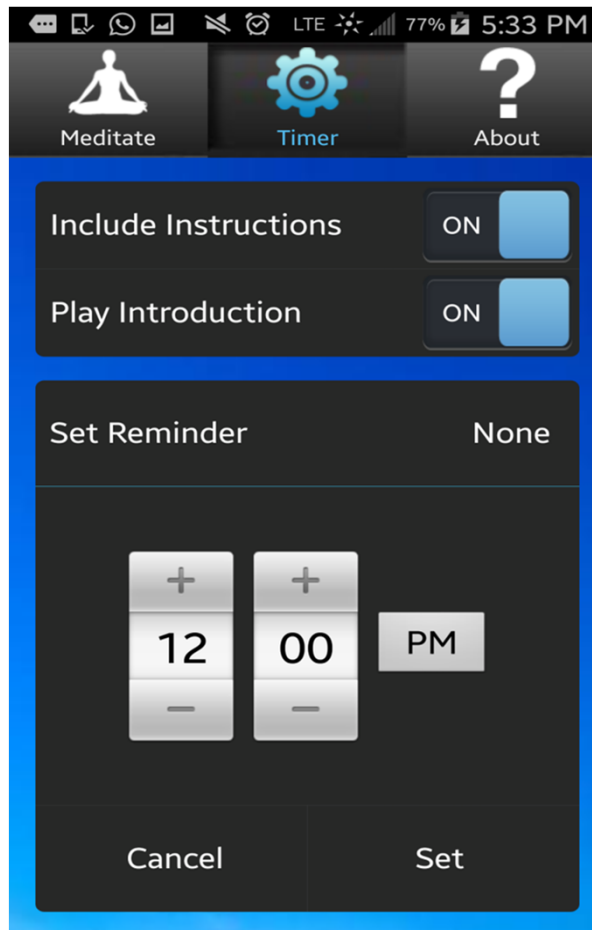
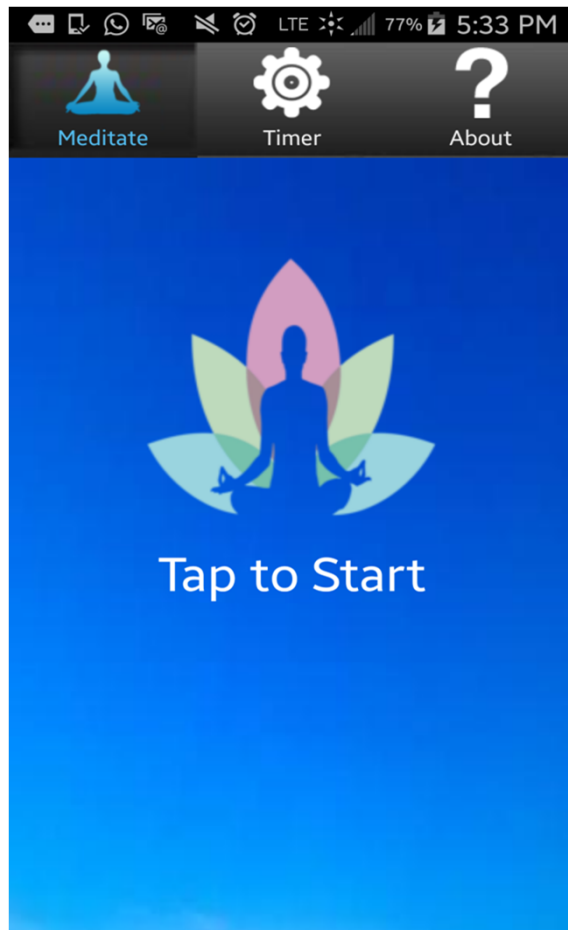
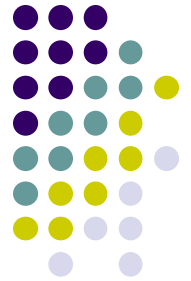
Stressed Management ?



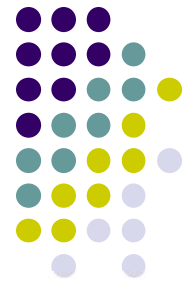
Interest in Mobile stress reduction application



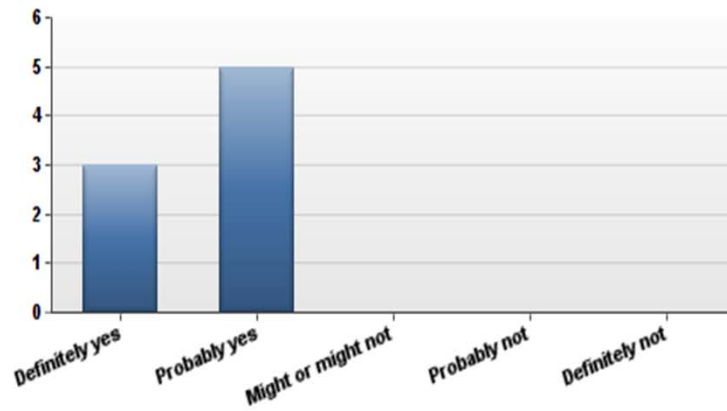
# DeStress



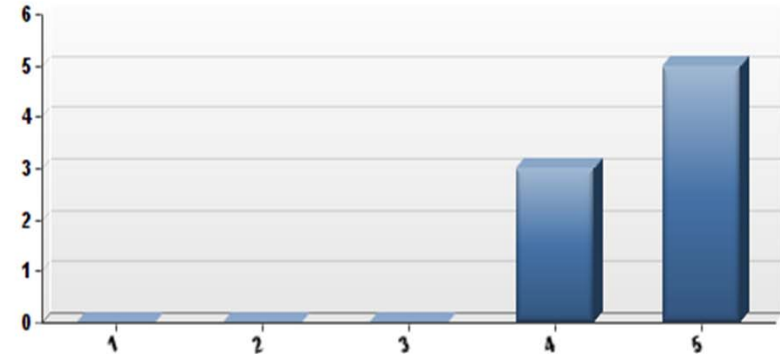
# Does the DeStress actually help with reduce Stress



4. Has the phone application DeStress helped you reduce your stress overall ?



5. On a scale from 1 to 5 (with 1 being not satisfied at all to 5 being extremely satisfied ) How wo...



**YES!**

# User Discussions

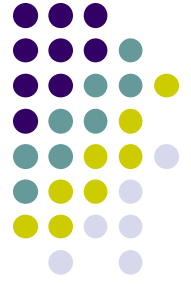


“Relaxing application “

“.. worked suprisingly well”

“Wish there were longer and shorter meditation sessions”

“ I like blue”



## Conclusion and future work

- Yes, a mobile application is able to teach an individual how to manage their stress.
- The next step is to utilize the users saved meditation times to automatically prompt meditations.
- Increase meditation options
- Implement other stress reduction techniques.

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- UCLA