2nd Annual Design Competition

Monthly meeting

October 26th, 2016
Agenda

• Brief introductions

• Upcoming interactions with seniors

• Aging sensitivity training

• Form teams
## Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>Sep. 28</td>
<td>7-9pm</td>
<td>Info. Session</td>
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<tr>
<td>Oct. 26</td>
<td>7-9pm</td>
<td>Aging sensitivity training</td>
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<tr>
<td><strong>Oct. 28</strong></td>
<td><strong>11:30am-1pm</strong></td>
<td>UCSD Retirees-Meeting 1</td>
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<td><strong>Nov. 12</strong></td>
<td><strong>10am-12pm</strong></td>
<td>LCG-Meeting 1</td>
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<td>Nov. 30</td>
<td>7-9pm</td>
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<td>Dec. 15</td>
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<td>LOI DUE</td>
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<td>Jan. 13</td>
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<td>UCSD Retirees- Meeting 2</td>
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<td>Jan. 16</td>
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<td>PROPOSAL DUE</td>
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<td>Jan. 25</td>
<td>7-9pm</td>
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<td>Feb. 25</td>
<td>1-3pm</td>
<td>LCG-Meeting 2</td>
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<td>Feb. 22</td>
<td>7-9pm</td>
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<td>Apr. 14</td>
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<td>UCSD Retirees- Meeting 3</td>
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<td>Apr. 26</td>
<td>7-9pm</td>
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<td>May 24</td>
<td>7-9pm</td>
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<tr>
<td>May 27</td>
<td>10am-12:30pm</td>
<td>LCG – Meeting 3</td>
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<td>June</td>
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<td>ALUMNI DAY – FINAL DAY OF COMPETITION</td>
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**LCG**: La Costa Glenn Community, Carlsbad. Three meetings scheduled on Saturday morning.  
**UCSD Retirees**: Three meetings scheduled on Friday at lunch. Lunch provided.  
**Monthly update meeting**: Five meetings scheduled on Wednesday, 7-9pm. Dinner provided.
Interactions with Seniors

• Upcoming events:
  – UCSD Retirees
    • Friday 10/28/16, 11:30am-1pm (Booker Suite)
  – La Costa Glen (LCG)
    • Saturday 11/12/16, 10am-12pm
    • 1940 Levante St., Carlsbad, CA 92009 (Contact person at LCG: Kathy Owen)

• Have at least one member of each team at these events
• Sign-up online at the latest 10 days prior to the event
  http://jacobsschool.ucsd.edu/events/2016/designcompetition/

• Observation/interactions in addition to these events
WHAT IS SUCCESSFUL AGING?

Early Definition

• Absence of disease
• High physical and cognitive function
• Engagement with life

(Rowe and Kahn, Science, 1988)
IDA KEELING (AGE 100) SETS WORLD RECORD FOR CENTENARIANS IN 100-METER DASH; IDA ENTERED HER FIRST ROAD RACE AT AGE OF 67

(nbcSports.com, May 1, 2016)
Group of 80-Year-Olds Sets Record for Being the Oldest Team to Swim the 21-Mile Catalina Channel

(The San Diego Union-Tribune, August 20, 2015)
Alan Day, 91 years old

CBC News, June 5, 2016;
Can the definition of successful aging include being in a wheel chair for most of one’s adult life?
Components of Health

Graph showing the relationship between age and health scores across different components:
- Mental Health
- Physical Health
- Cognitive Health

The graph illustrates how each component changes with age, indicating trends in standardized health scores. The x-axis represents age, ranging from 20 to 100 years, while the y-axis shows the standardized health score. The graph includes percentile markers to indicate the proportion of the population that falls below certain health score thresholds.
“I think I do science better now than I did when I was younger. In science, judgment is so important, and I now have a better understanding of which problems are important and which are not.”

--- Dr. Eric Kandel, Nobel Laureate (1921 -)
Sully Sullenberger
Typical Physical and Cognitive Changes in Healthy Aging

Zvinka Zlatar, Ph.D.
Assistant Professor
Department of Psychiatry
Design Competition: October 26, 2016
AGING

- All people experience changes in their body with age
- Those 85+ experience more physical problems than those in their 60s
- In spite of physical loss and difficulties, most older adults adjust well and compensate for losses
- We will briefly learn about the most typical physical changes that occur in our bodies due to aging
- For more information about aging:
  - Office hours
  - Thursdays 10 am -11 am
  - Altman CTRI 4 East 409-K4
  - zzlatar@ucsd.edu
  - 858-822-7737
The Older Population in the U.S.

- Number of persons 65+ in 2009: 39.6 million
- 12.9% of the population is an older American (over 1 in 8 Americans)
- Older adults will represent 19.3% of the U.S. population by 2030
Sensory and Perceptual Changes
Vision

- Dry eyes
- Cataracts
- Presbyopia (age 40+)
- Difficulty distinguishing colors
  - especially blue and green (hardening of the lens)
- Loss of peripheral vision
- Difficult to judge distances
  - Not enough time to move out of the way before running into something
- Harder to adjust to changes in light
  - Easier to trip over things or fall

**Implications**

- Driving
- Independence
How to manage?

- Artificial tears
- Glasses
- Laser surgery for presbyopia
- Medicine
- Transition slowly from inside/outside environments to adjust for changes in light
- Allow plenty of space between cars when driving
Hearing

- Talking may sound muffled
  - Difficulty with high pitched consonant sounds (th, sh, s, f, p)
  - Vowels are easier to hear (lower pitch)
- This type of hearing loss makes it difficult to:
  - hear in noisy places, such as a restaurant or mall
  - use a telephone
  - watch television with others because the volume may be too high for people who can hear normally
- Problems with balance

Implications

- Increased risk of falling
  - Social isolation
- Misinformation (medical information, job-related, planning)
How to manage?

- Shouting at a person who is hearing-impaired only makes problems worse
- Shouting raises the pitch of your voice, which makes it even harder to hear what you are saying
  - Ask people to speak with a lower tone of voice and articulate slowly
  - Limit background noise
- Hearing aids
- Wax removal
- Ask physician to write important things down
Touch and Dexterity

- Fingers, feet, knees and elbows can begin to feel stiff
- Changes in sense of touch
  - More difficult to detect extremes in temperature, and to feel vibration, pressure, and even pain
- Muscles grow smaller and weaker, especially if not exercised
  - Affects ability to lift heavy objects

- **Implications**
  - Cut themselves and not notice the pain
  - Burn themselves with a heating pad or hot bath water
  - Have trouble getting out of an overstuffed sofa or chair
  - Fall and hurt themselves
How to manage?

✓ Lower water heater temperature <125 F (51 C)
✓ Check weather forecast for clothing decisions
✓ Inspect skin (especially feet) for injuries
✓ If there is injury, seek help even if not painful
Taste and Smell

- To taste food, you must have a sense of smell
  - Eating less enjoyable
  - Smell diminishes (70+ years)

- Diminished smell also poses safety problems
  - Spoiled food, smoke, and escaping gas

- Less saliva

**Implications**

- Swallowing problems
  - Dry mouth

- Loss of pleasure from eating, possible malnutrition

- Quality of life

- Can’t smell danger (gas, smoke, spoiled food)
How to manage?

- Add more spices
- Change medicines that can reduce smell
- Buy safety products, such as a gas detector that sounds an alarm you can hear
- Follow food expiration dates
Sensory and perceptual changes affect cognitive functions
Cognitive Changes

Typically Affected:
- Processing speed
- Attention
  - Selective (slower but accurate)
  - Divided (switching, less resources)
- Working memory (active manipulation)
- Memory
  - Episodic (personal events)
  - Prospective
- Executive functions

Not Typically Affected:
- Sustained attention (vigilance)
- Memory
  - Semantic (better than young)
  - Procedural
- Language/Speech
- Decision making

**Fig. 1.** Means and standard errors for composite scores in five abilities as a function of age based on data from studies by Salthouse and colleagues (e.g., Salthouse, 2009a). Sample sizes ranged from 2369 to 4149.
How to manage?

- Pay attention to remember better
- Stay physically and cognitively active
- Learn new things
- Use memory strategies
- Healthy lifestyle (antioxidants, fatty acids)
- Manage risk factors (cardiovascular)
- Cognitive training
- Social engagement
- Reversible causes (medication, malnutrition, sensory loss)
Physical disorders related to aging

- Osteoporosis (loss of bone mass)
- Increased fall risk (can break bones or hit head)
- Arthritis (pain in the joints)
- Muscle loss (sarcopenia)
- Heart disease (heart attack, arrhythmias)
- Stroke (can lose function)
- Diabetes (pain, increases risk of cognitive decline)
- Malnutrition (malabsorption of vitamins and nutrients)
Neurologic disorders associated with aging:

- Mild cognitive impairment
- Alzheimer’s disease and other dementias (vascular)
- Parkinson’s disease
- Stroke
- Traumatic brain injury
- Delirium
- Depression
- Sleep apnea and insomnia

NOTE: Cardiovascular risk factors can increase the risk of dementia and stroke/heart disease.
The Good News!

- Many age-related cognitive changes can be managed
  - External reminders and aids
  - Medications
  - Prevention/treatment of cardiovascular risk factors
- Lifestyle prevention strategies
  - Physical activity
  - Mindfulness/meditation
  - Nutrition
  - Social activity
  - Mental/cognitive activity and training
Aging Sensitivity Training
Thoughts?

- How did you feel during these activities?
- Were the activities difficult for you? Explain your feelings.
- How do these activities help you relate to older people in real life situations?
- How can you use what you learned in this activity in your own life?
Thank you

- Remember that everyone ages differently and lifestyle choices can have a big impact on how we age
  - Keep physically active
  - Be involved mentally and socially
  - Take care of stress
  - Remember to relax
Forming Teams

REQUIREMENTS

- At least one team member from Jacobs School of Engineering and one team member from Social Science
- At least one team member has taken ONE of the following courses by the end of Winter Quarter, 2017:
  - COGS 102C: Cognitive Design Studio
  - COGS 120: Interaction Design
  - CSE 190: Human-Computer Interaction for Health
  - DSGN 1: Design of Everyday Things
  - ECE 180: Successful Entrepreneurship for Microsystems
  - MAE 154: Product Design & Entrepreneurship
  - MGT 121A: Innovation to Market