Computer Rage:
A Student Response to Frustration with Technology

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Frustration Theory

- Most behavior is goal directed.

- Problem solving occurs when there are obstacles between the current state and the desired goal state.

- While rationale problem solving involves the search for and testing of alternative solutions, sometimes obstacles can also cause a sense of frustration.

- When frustration exceeds a person’s limit to control it, rage can occur.
Learning Can be Frustrating

- Not having access to the materials in a timely manner.
- Not understanding the material.
- Not completing the required assignment, well or on time.
- Not achieving the “learning objective.”
- etc., etc.
- Not achieving the desired grade.
Teaching with Technology

tries to solve many of frustrations with learning by using technology (e.g., accessibility, multimedia, etc).
Frustration Theory + Learning + Technology

But technology also introduces a whole new set of frustrations with computers!

The outcome can be “computer rage” in the context of learning.
What is Computer Rage?

- Physical Bashing of a Computer and/or a Computer Related Item
- Verbal Abuse of a Computer and/or a Computer Related Item (Brinks, 2004)
- Heightened Physiological Response with Associated Feelings of Anger and Frustration (Lazar, Jones, Bessiere, Ceaparu, & Shneiderman, 2004)
Full Theory of Computer Rage
Simple Theory of Computer Rage

Microsoft → Rage
Online Survey Sample

- lap.umd.edu/computer_rage
- Total sample $N = 2141$
- US sample of undergraduate students, $N = 277$, from 5/15/2002 to 1/30/2005 with a massive spike from 12/12/2004 to 1/21/2005 as result of media exposure (Baltimore Sun, Kojo Nnamdi Show, Future Tense, WUSA Channel 9 News, ...)
- 202 males and 75 females.
Computer Experience of the Students

- 97% of the males and 81% of the females reported spending 7+ hours per week on the computer.

- 94% of the males and 68% of the females reported spending 7+ hours per week on the computer.
Overall how frustrated are you with computers?

- **Males**
  - mean = 3.60
  - sd = 2.23

- **Females**
  - mean = 4.82
  - sd = 2.04

\[ t(274) = 4.12, \ p < .001 \]

Chi-Square (8) = 34.5, \ p < .001
Have you ever been angry with a computer?

- **Males**
  - mean = 4.83
  - sd = 2.51

- **Females**
  - mean = 5.68
  - sd = 1.99

**t-test**:
- \( t(272) = 2.62, p < .01 \)

**Chi-Square**:
- \( \chi^2(8) = 17.20, p < .05 \)
How frustrated do you get when the computer crashes and has to be restarted?

**Males**
- Mean = 5.83
- SD = 2.64

**Females**
- Mean = 7.32
- SD = 1.90

$t(274) = 4.46, p < .001$

Chi-Square (8) = 28.11, p < .001
To what extent have you been frustrated waiting for a computer to do something?

Males: mean = 5.67, sd = 2.67
Females: mean = 6.51, sd = 1.97

$t(274) = 2.47, p < .001$

Chi-square (8) = 21.87, $p < .01$

Percent within Gender

Not at all 1 2 3 4 5 6 7 8 9
Rating

Very much
How often have you been frustrated because you had to redo something over and over because of a computer problem?

<table>
<thead>
<tr>
<th>Rating</th>
<th>Not at all</th>
<th>Very much</th>
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<tbody>
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</table>

**Males**
- Mean: 4.63
- Standard Deviation: 2.48

**Females**
- Mean: 5.40
- Standard Deviation: 2.05

**t-test**: $t(275) = 2.39, p < .05$

**Chi-Square Test**: $\chi^2(8) = 16.14, p < .04$
How annoying is it to you to use a mouse to move a cursor around the screen?

**Gender**

- **Males**
  - Mean: 2.13
  - Standard Deviation: 2.03

- **Females**
  - Mean: 3.20
  - Standard Deviation: 2.54

**Statistical Test**

- \( t(274) = 3.64, p < .001 \)

**Chi-Square Test**

- \( \chi^2(8) = 25.97, p < .001 \)
How irritated have you been by how hard it is to read the computer screen?

- **Males**: Mean = 2.26, SD = 1.78
- **Females**: Mean = 3.37, SD = 2.31

$t(273) = 4.26, p < .001$

Chi-Square (8) = 27.98, $p < .001$
How annoyed have you been because of typing errors on a computer?

- **Males**
  - Mean: 2.95
  - SD: 2.22

- **Females**
  - Mean: 3.69
  - SD: 2.32

**t(273) = 2.46, p < .05**

Chi-Square (8) = 14.66, p > .05
How frustrated have you been by not understanding how the computer works?

**Gender**
- **Males**
  - mean = 2.49
  - sd = 2.06
- **Females**
  - mean = 4.47
  - sd = 2.54

*t*(273) = 6.66, *p* < .001

**Chi-Square**

Chi-Square (8) = 47.78, *p* < .001
How frustrated have you been when you could not figure out how to get the computer to do something that you wanted?

**Males**
- Mean: 4.43
- Standard Deviation: 2.59

**Females**
- Mean: 5.96
- Standard Deviation: 2.22

$t(275) = 4.53$, $p < .001$

Chi-Square $(8) = 26.33$, $p < .001$
How frustrating are computer manuals and documentation to you?

Males

mean = 3.85
sd = 2.76

Females

mean = 5.57
sd = 2.37
t(272) = 4.78, p < .001

Chi-Square (8) = 34.46, p < .001

Percent within Gender

Mean = sd =
How annoyed have you been by computer help systems not giving you answers?

Males
mean = 5.52
sd = 3.00

Females
mean = 6.65
sd = 2.36

$t(275) = 2.95$, $p < .01$

Chi-Square (8) = 16.47, $p < .05$
How annoyed have you been with computer help desks and hot lines?

**Males**
- Mean = 4.97
- SD = 3.10

**Females**
- Mean = 5.83
- SD = 2.57

**t(272) = 2.13, p < .05**

**Chi-Square (8) = 17.34, p < .05**
How frustrating is it trying to find information on the World Wide Web?

- **Males**
  - Mean: 2.80
  - SD: 2.06
- **Females**
  - Mean: 3.76
  - SD: 2.24

**T-test**:
- $t(274) = 3.36$, $p < .001$

**Chi-square**:
- Chi-Square (8) = 27.29, $p < .001$

### Rating Distribution
- **Percent within Gender**

Rating: 1, 2, 3, 4, 5, 6, 7, 8, 9
- Not at all
- Very frustrating
How annoyed are you by too much email?

Percent within Gender

Males: mean = 3.83, sd = 2.64
Females: mean = 4.68, sd = 2.55

$t(274) = 2.40, p < .05$

Chi-Square (8) = 19.22, $p < .05$
How frustrated have you gotten when trying to set up a new computer system?

- **Males**: mean = 3.02, sd = 2.35
- **Females**: mean = 4.63, sd = 2.59

**t(275) = 4.90, p < .001**

**Chi-Square (8) = 30.37, p < .001**
How frustrated have you gotten when trying to install new software?

Chi-Square (8) = 28.09, p < .001

Chi-Square (8) = 28.09, p < .001

<table>
<thead>
<tr>
<th>Percent within Gender</th>
<th>Males</th>
<th>Females</th>
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<tr>
<td>Not at all</td>
<td>31.3%</td>
<td>44.8%</td>
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<tr>
<td>Very frustrated</td>
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</tbody>
</table>

mean = 3.13
sd = 2.22

mean = 4.48
sd = 2.42

t(275) = 4.40, p < .001
How irritating has it been for programs to become obsolete and having to upgrade to new versions?

<table>
<thead>
<tr>
<th>Rating</th>
<th>Males</th>
<th>Females</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>4.15</td>
<td>5.80</td>
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</table>

$t(275) = 4.64$, $p < .001$

Chi-Square (8) = 38.12, $p < .001$
Have you ever wanted to throw your monitor out of a window?

Chi-Square (8) = 21.02, p < .01

t(272) = 1.96, p > .05

<table>
<thead>
<tr>
<th>Gender</th>
<th>Rating</th>
<th>Males</th>
<th>Females</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Never</td>
<td>3.67</td>
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<tr>
<td></td>
<td>sd</td>
<td>2.91</td>
<td>2.71</td>
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</table>

Percent within Gender

Never | Rating | Very often
Have you ever felt like smashing a computer screen with a heavy object?

**Chi-Square (8) = 13.17, p > .05**

- **Males**
  - Mean = 4.30
  - Standard Deviation (sd) = 3.05
- **Females**
  - Mean = 4.47
  - Standard Deviation (sd) = 2.70

- t(274) = .42, p > .05
Experience Factors and Frustration

Number of hours on the computer and the WWW was correlated, $r = .54$.

Both of these experience factors were negatively correlated with frustration on all factors except with help systems, help desks, and email.
Students versus Others

- There were 277 students (undergraduates and graduates) and 629 others (employed, not employed, etc).
- Students had an average age of 23.7 and others 38.7.
- Students were significantly LESS frustrated than others on the following factors:
  - reading a computer screen
  - manuals and documentation
  - help desks and hot lines
  - too much email
  - installing new software
  - upgrading to new versions
Incidence of Rage Behaviors by Gender

- Dropped a computer on the floor
- Broke a computer screen
- Ripped out a computer cable
- Kicked a computer
- Slammed a keyboard down
- Slammed a mouse
- Popped off keys from a keyboard
- Scratched or bent a CD ROM disk
- Bent or mutilated a computer disk
- Cursed a computer out loud

Percent within Gender
The Down Side of Computer Rage

- Destruction of personal, and/or school property (Dollar estimates are hard to come by. IT personnel at UMD were queried. Result: no response, no comment, don’t know, privileged information, a lot)

- Potential injury to self or others: physical and psychological

- Loss of personal time, study time, class time
The Up Side of Computer Rage

- Release of “pent” up anger and frustration
- Directed at physical objects rather than other people
- Can be personally rewarding
- Helps to reduce inventory of older equipment and increase purchase of new equipment
Managing Computer Rage: Good Practices

- **Controlled Rage:** Find the appropriate time, place, and method.
- **Safety First:** Use safety googles and protect others.
- **Select Targets Wisely:** Preferably Vent on Obsolete Equipment.
- **Consider Vicarious Computer Rage:** Watch our Computer Rage I and II DVDs.
Avoiding Frustration While Teaching/Learning with Technology

- Expect the worst: back-up, pre-plan alternative solutions, multiple access points.
- Demand reliable, easy to use systems.
- Keep spare mice, keyboards, computers on hand.
- Take a deep breath and count to 1000.
The End

NOW WHO'S MADE THE "FATAL ERROR"?