



**Handling frustration, Relational
and Caring computers, Empathy,
PubPub**

- Four out of five have seen colleagues hurling abuse at their PCs
- Three quarters admit that they swear at their computers.
- Nearly half of all people working with computers feel frustrated or stressed because of IT problems
- A quarter of all under-25-year-olds admit they have kicked their computer (MORI survey in UK, 1250 users)

Skills of *Emotional Intelligence*:



- Expressing emotions
- Recognizing emotions
- Handling another's emotions
- Regulating emotions \ if “have emotion”
- Utilizing emotions /

(Salovey and Mayer 90, Goleman 95, Picard 97)

“Bad Day”

“A real bad day at the office”



Image courtesy of the [Portland Center Stage](#) on flickr. License CC BY-NC.



How do you build empathetic technology? What happens when technology appears to show empathy?

Computer empathy

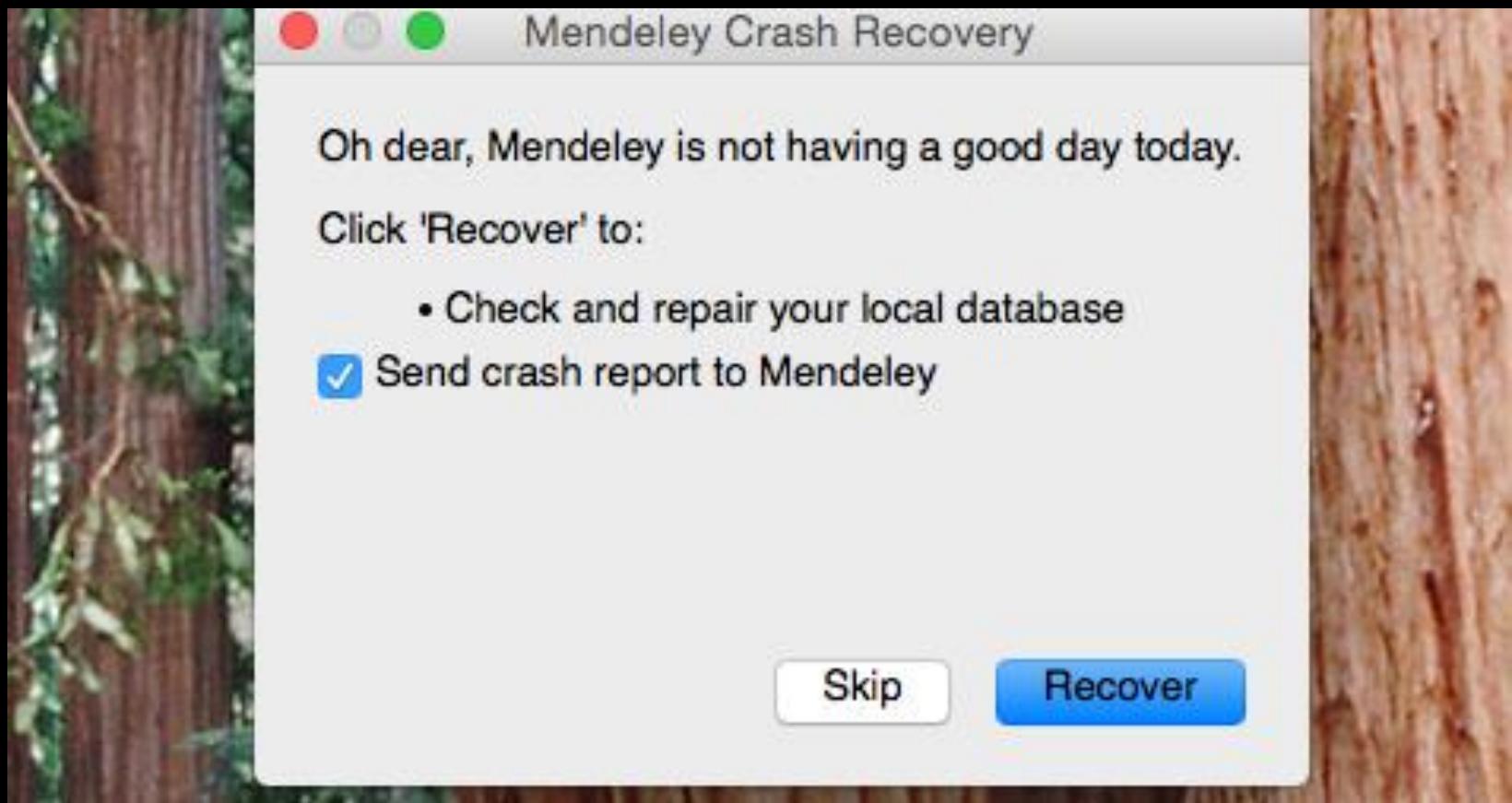


→ Klein, J., Moon, Y., & Picard, R. W. (1999). [This computer responds to user frustration](#) In , CHI '99 extended abstracts on Human factors in computing systems (pp. 242-243). Pittsburgh, Pennsylvania: ACM. doi: 10.1145/632716.632866.

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What is the affect elicited? Is the affect ignored or addressed?
What kind of emotional intelligence is this showing?

Example: Emotional Intelligence (from Ben Bloomberg HWK1) 404 page on Tumblr.com

Page Not Found

I'm sorry, you've reached a page that I cannot find. I'm really sorry about this. It's kind of embarrassing. Here you are, the user, trying to get to a page on LiveJournal and I can't even serve it to you. What does that say about me? I'm just a webserver. My sole purpose in life is to serve you webpages and I can't even do that! I suck. Please don't be mad, I'll try harder. I promise! Who am I kidding? You're probably all like, "Man, LiveJournal's webserver sucks. It can't even get me where I want to go." I'm really sorry. Maybe it's my CPU...no that's ok...how bout my hard drives? Maybe. Where's my admin? I can't run self-diagnostics on myself. It's so boring in this datacenter. It's the same thing everyday. Oh man, I'm so lonely. I'm really sorry about rambling about myself, I'm selfish. I think I'm going to go cut my ethernet cables. I hope you get to the page you're looking for...goodbye cruel world!

-the webserver

Error: could not find server

If you think you've reached this page in error:

- Make sure the URL you're trying to reach is correct.
- Check <http://status.livejournal.org> to view LiveJournal's current status.

Otherwise, you can:

- Go [back to the previous page](#)
- Go to the [LiveJournal Homepage](#).
- Explore the [Site Map](#)

“Management of User Emotional State”



1. You can't always fix the problem at the time the user is frustrated.
2. You can still help: actively support someone in their ability to regulate, manage, and recover from their own negative emotional states.

Goal:

Help relieve user frustration

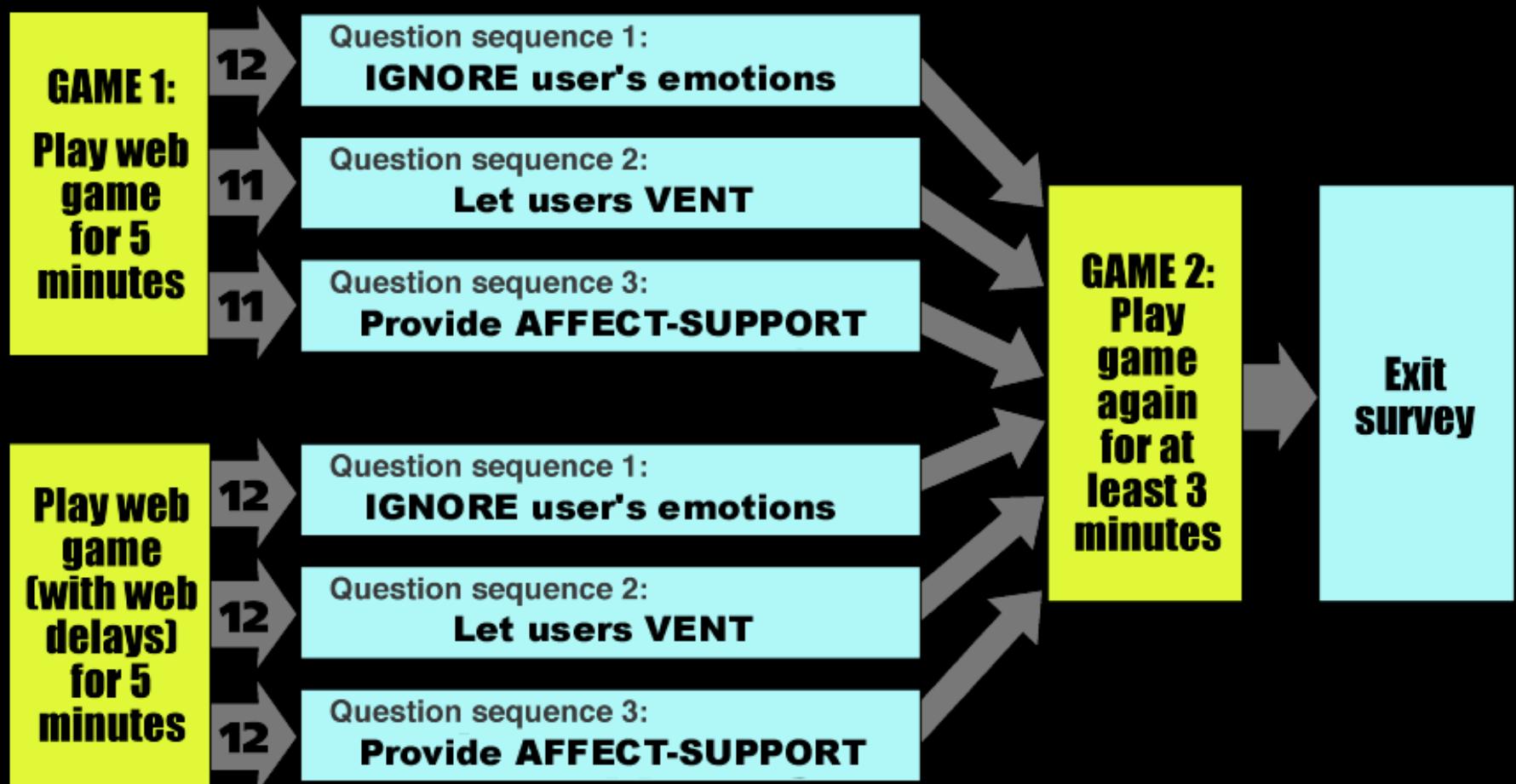
Strategy:

1. Recognize situation as frustrating
2. Is user willing to talk? If so:
 - Practice **active listening**, with **empathy** and **sympathy**
“Sorry to hear your experience wasn’t better”
“This computer apologizes to you for ...”
 - Allow for repair...

Evaluation:

Build it. Test this “AFFECT-SUPPORT” with 70 subjects against two control conditions: IGNORE and VENT.

Test/evaluation: 70 subjects



Here's the 6 conditions again, from a different view. We ran 70 subjects, half men half women, and here's what they did: first they were briefed on the cover story from a script. Then they played a timed game for 5 minutes, in which the user directs a character to go through a maze and find treasure—we deliberately designed it to be boring, and users confirmed this. Folks in the top half of this diagram just played the game, but subjects in the *bottom* of this diagram *got nailed*.

(POINT) See it only *appeared* to be a web browser (the whole thing was done in Director). During the five minutes of timed play, we faked a mess of web-server delays, so that the character was frozen to the user's controls but the on-screen timer continued to elapse. This was the DELAY condition.

Then subjects answered one of three apparent on-line questionnaires: One asked questions about the user and the game through radio buttons, not allowing the user to report anything related to a problem. The second questionnaire asked some of the same questions as the first, but *then* enabled subjects to report the problem and describe any emotional reaction. The third questionnaire started out like the first two, but then turned into the AFFECT-SUPPORT agent I showed you.

All subjects were then asked to play the game a second time for at least 3 minutes, after which they could quit at any time (up to a 20 minute max). This time there was no prize or any other incentive to play for any length of time.



Klein '99

Instructions

Thank you for participating in this study!

We would like you to evaluate a new web-based game we are developing and give us your feedback. The version you will be playing is an early prototype consisting of a main character, treasure to be found and collected, and paths around which you will move your character. Other elements will be added later.

To make sure nothing distracts you during this test, we have disabled all but a minimal set of features of the Netscape browser and Macintosh desktop.

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The cover story we told subjects was that we had a new, high-tech, Web-based game prototype we needed them to evaluate, but to do their *absolute* best at. Two \$100 prizes would be given to the top two scorers, and get this, even novice gamers could do well, since success was based on intelligence (and these were mostly MIT students, so this got them going).

Instructions

How frustrated do you think you got playing the game,
all things considered?

- 10 (The most frustrated I have ever felt in my life while playing a game)
- 9
- 8
- 7
- 6
- 5
- 4
- 3
- 2
- 1
- 0 (Absolutely not frustrated at all)

Okay

Instructions

Wow, it sounds like you felt really frustrated playing this game.

Is that about right?

Yes

No

Instructions

That must feel lousy. It is no fun trying to play a simple game, only to have the whole experience derailed by something out of your control.

This computer apologizes to you for its part in giving you a crummy experience.

Okay

Instructions

Please describe your reaction to this experience.

The delays were really annoying, but I got the hang of the game after a whi

[]

Okay

Hypothesis 1:

DELAY condition should frustrate more than NO-DELAY



Result 1:

Manipulation check: Delay did frustrate more

- *Full factorial ANOVA, $F(1, 64) = 4.54, p < .05$*

Hypothesis 2:

AFFECT-SUPPORT group (following intervention) should play longest compared to IGNORE and VENT groups

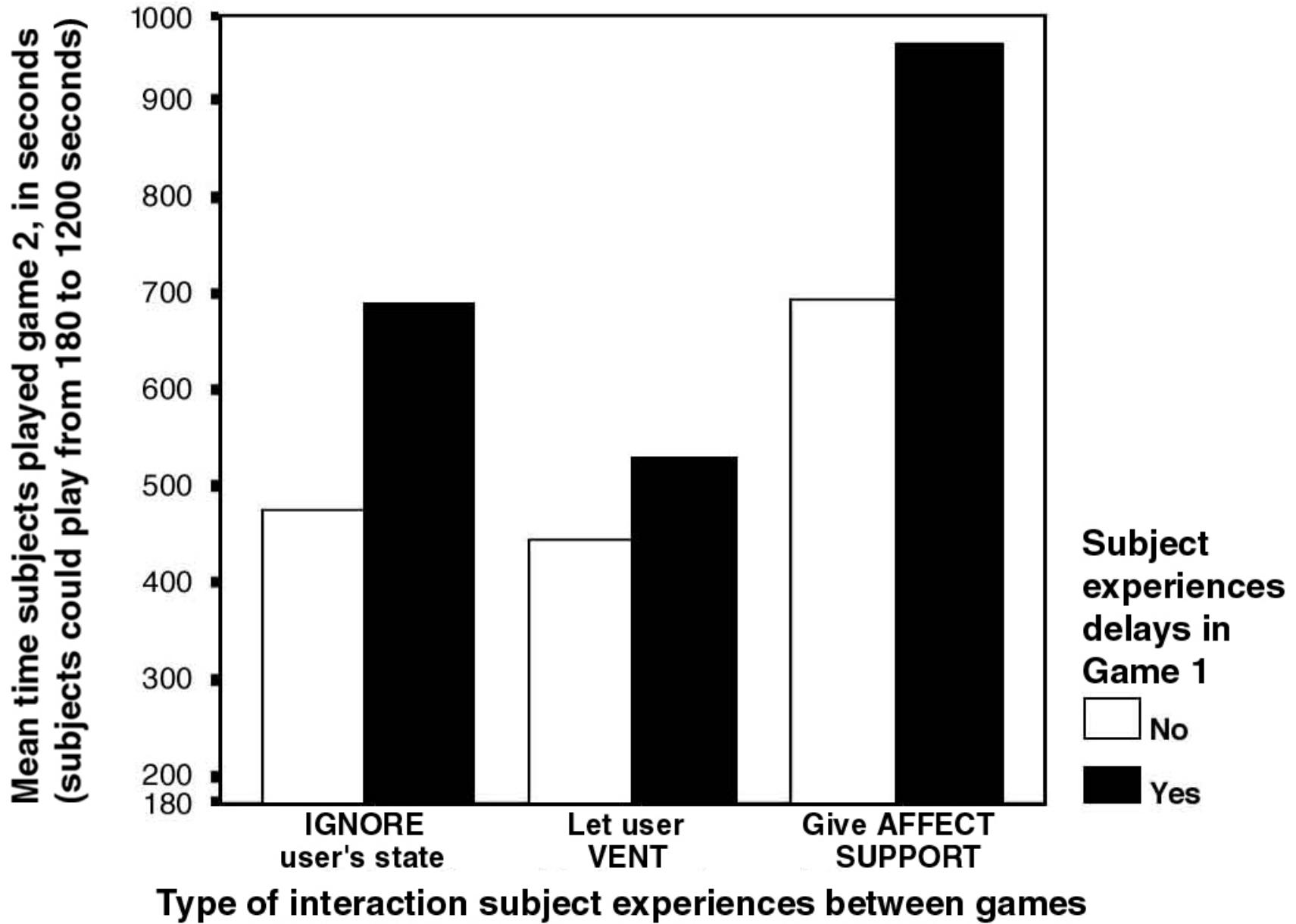
Results confirmed hypothesis 2:

Main effect for the three kinds of feedback

- *Full factorial ANOVA, $F(2, 64) = 8.00, p < .01$*
- *2 Planned orthogonal comparisons, $p < .01$*

Other Results

- No effect from gender, age, trait arousability or game play experience
- Main effect for frustration level
 - Full factorial ANOVA, $F(1, 64) = 9.20, p < .001$
- No significant differences found between IGNORE and VENT conditions





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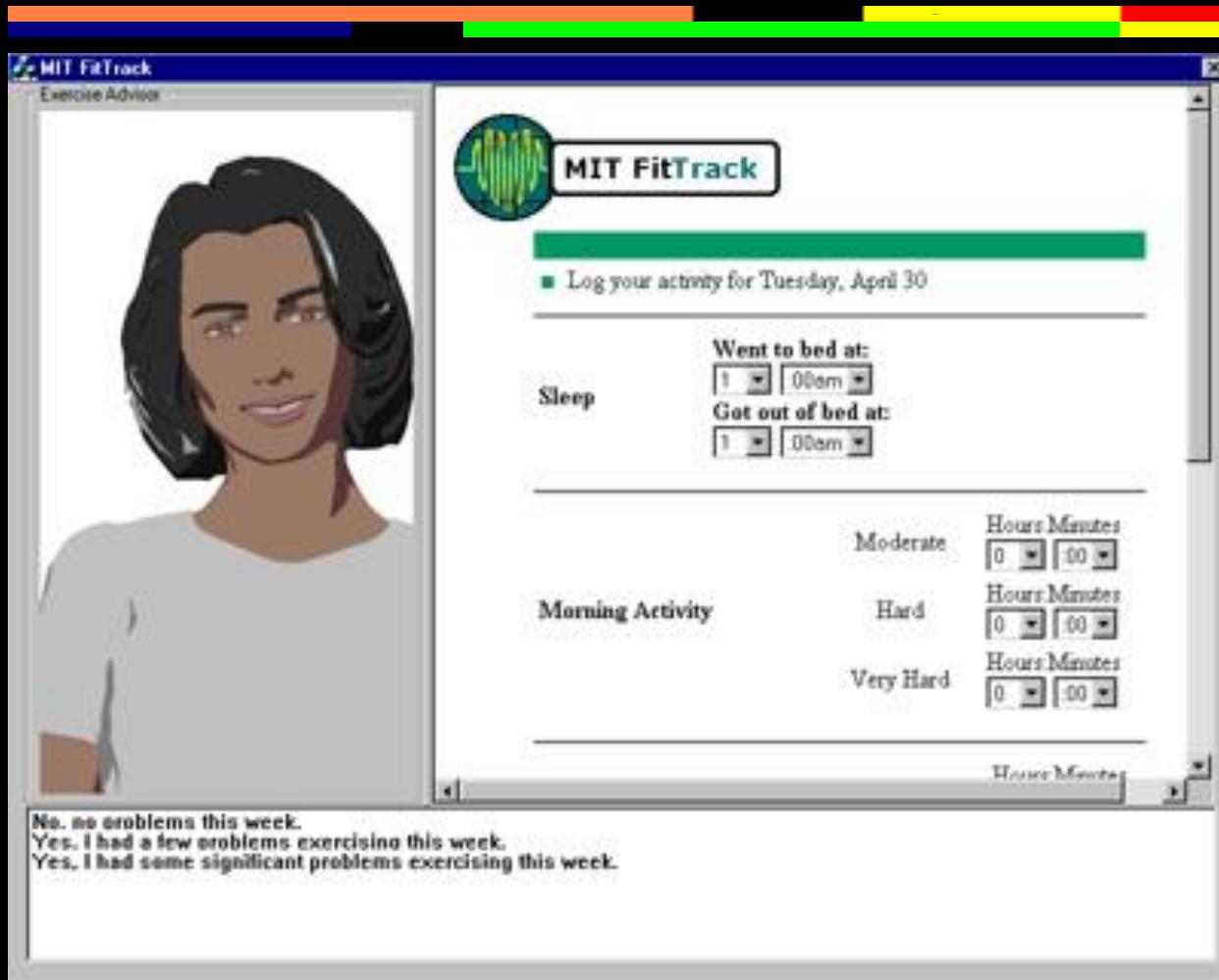
It's not about the nail



Consider this criticism:

“Empathetic technology” cannot succeed because technology cannot feel what people feel. Can you give an example where one person cannot feel what another person feels, and yet their empathy succeeds?

What happens when people interact with a “Relational” agent for a month, compared to a Non-Relational agent, where both agents have same scripts encouraging exercise, and the relational has other skills, e.g., empathy



RELATIONAL:
also asked about
& responded to
affect, used small
talk, adjusted
language over
time, adjusted
social distance...

Significant effects of adding Relational skills to agent:



- "Laura and I respect each other." ($p < .001$)
- "Laura and I trust one another." ($p < .001$)
- "I feel Laura cares about me..." ($p < .001$)
- "I feel Laura appreciates me." ($p = .009$)
- "I believe Laura likes me." ($p < .001$)
- Liking of Laura. ($p = .007$)
- Desire to continue working with Laura. ($p = .001$)

(Bickmore and Picard, TOCHI 2004)

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