

Tear Machine

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THIS IS NOT A DEFINITIVE FINAL REPORT

FORMATIVE evaluation studies like this one often:

- **are conducted quickly**, which may mean
 - small sample sizes
 - expedited analyses
 - brief reports

- **look at an earlier version** of the exhibit/program, which may mean
 - a focus on problems and solutions, rather than successes
 - a change in form or title of the final exhibit/program

Mind – Formative Evaluation Tear Machine

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PURPOSE

- To see if visitors have emotional response to seeing tears on their own or someone else's face.
- To see if a chin-rest and changes to the exhibit label would help people use the exhibit.

INTRODUCTION/CONTEXT

Tear Machine is a tabletop exhibit which, if a visitor places their face in the right position, will project images of 'tears' that flow from their eyes. This effect is also visible to observers. As part of the Mind collection, one goal of this exhibit is to elicit and bring attention to emotional reactions that visitors may have while seeing tears on their own or another person's face. Specifically, it is thought that seeing the tears will elicit, as the label puts it, "empathy with a person in apparent distress."

Before this evaluation, several usability issues were recognized that kept visitors from seeing the projected tears:

- The directions on the label were confusing- visitors were told to hold their face farther from the mirror than actually required, and it referred to a “blue line” that did not exist in the latest iteration of the exhibit.
- The label was dark and unlit, making it difficult to read.
- The effect (tears) that visitors are supposed to see was only mentioned at the bottom of the label.
- There were no indicators on the exhibit to help visitors know where to put their face in order to see the tears.

METHODS

We conducted both cued and uncued observations and interviews. Due to the usability issues mentioned above, we decided to cue visitors to use the exhibit and provide help to get them to see the ‘tears’ if necessary. This would allow us to see whether or not visitors had emotional responses to the experience under best-case circumstances. We also made two temporary usability ‘quick-fixes:’

- A text only, white on black label with revised instructions and a title (“Tears”)
- A temporary, non-adjustable chinrest to give visitors a better idea about where to position their face. Unfortunately, this chinrest was broken by a visitor after the first day of data collection, so only 6 of 11 visitors used the exhibit with it attached. The remaining 5 visitors were forced to make-do without one, with manual edits to the label to reflect this change.

DEMOGRAPHICS N=11

Gender	Count	Age	Count
f	5	8...12	1
m	6	18-20s	1
		30s	1
		40s	2
		50s	2

Interview type	Count
cued	9
uncued	1
called over	1

Chinrest status	Count
With chinrest	6
Without chinrest	5

Due to time constraints and a lack of visitor traffic, we were forced to be somewhat opportunistic in visitor selection. 9 visitors were cued- we chose the third visitor aged 8 and older to cross an imaginary line, brought them to the exhibit and had them use it, helping them to see the effect if necessary. 1 visitor was uncued- this person used the exhibit as a natural part of their visit, and was approached afterward. 1 visitor, a 9 year old girl, was called over to use the exhibit by her mother, who had already participated in a cued interview.

SUMMARIZED RESULTS

- The adjustable chinrest helped visitors to position their face in the right area.
- 6 of 11 visitors (55%) said that they didn't think the tears looked real. Of these six, only one of them reported an emotional change from seeing the tears.
- 4 of 11 visitors(36%) said that seeing tears on their face affected the way they felt. One of these visitors reported a strong reaction, the other responses were mild.
- 2 of the 5 people who saw another person with tears on their face reported a change in their emotions, but neither reported feeling sad.

CONCLUSIONS/RECOMMENDATIONS

Visitors still had trouble positioning their face correctly, but the chinrest helped.

Some suggestions to help visitors get their face in the right position:

- Future versions of the exhibit should feature an adjustable chinrest with a range that allows for both adults and children.
- The final label, like the evaluation prototype, should clearly explain the effect that visitors are supposed to have, possibly by putting the word 'tears' in the exhibit title.
- Raise the mirror slightly. Small children could still use the exhibit while standing, and large adults wouldn't have to put themselves in uncomfortable positions.

The majority of visitors did not think the tears looked real, which may have hampered the emotional impact of the exhibit.

This suggests that efforts to improve realism should be a main focus of any future iteration of this exhibit.

Specific suggestions for improvements are as follows:

- Adjust the tear ducts' positions so that tears appear to drip from the corner of the eye.
- Allow for a varying drip rate, so visitors do not notice a pattern or rhythm.
- Make the tears more drop-like.
- Eliminate the soap film buildup on the Plexiglas.

Emotional reactions from visitors are not the norm, and in general, not strong.

Most of the visitors did not have an emotional reaction to seeing tears on their own or a loved one's face, and only one person had a strong reaction. Because the majority visitors thought that the tears didn't look real, we can't make any conclusions about whether this would be the case with more realistic tears.

DETAILED RESULTS

Usability

In its current form, 5 of 11 visitors (45%) needed help from the evaluator or another visitor to get the tears to appear on their face. This was expected, based on usability issues already recognized. As these were mostly cued interviews, the number of visitors that would take the time to do this without prompting would likely be lower.

The visitors that used the exhibit with the temporary chinrest in place were more successful than those without it: 4 of 6 (67%) of them were able to see tears on their face with the chinrest, but of those who used the exhibit without it, only 2 of 5 (40%) were able to do so, despite a minor label rewrite that reflected the change.

6 of 11 visitors (55%) stated (without prompting) that they didn't think the tears looked real. Of these 6, only one of them reported an emotional change from seeing the tears. (see the response of M, 40s, in *EMOTIONAL REACTIONS*, p. 6)

F, 18-20s: (translated from German by boyfriend) "She doesn't think it looks real." "Tears should be smaller at the top, but these are bigger."

M, 18-20s: "The effect is weak." "I don't think it looks real. It flows from the center of the eye, it looks like a clown."

M, 40s: "Right now there's a rhythm and the two sides are synchronized- it takes away from reality."

M, 50s: "Really it's not the tears I see, it's water dripping -it needs a material that shows the drops, not just flowing."

F, 20s: "No, it didn't seem real."

M, 20s: "No, it just wasn't realistic, I didn't get anything out of it."

Other usability issues:

- 3 visitors could not position their face in the light (the step necessary before tears can be seen) without help. Of these, 2 used the exhibit without the chin-rest, and the 3rd was a 9 year old girl.
- 2 visitors thought that the tears were like those painted on a clown's face. One of them saw this as a negative, the other did not place a value judgment on this.
- 2 visitors felt that they had to take their glasses off to get the effect.

- 2 visitors (both over 6') thought the mirror was placed too low, and had difficulty comfortably positioning their bodies.

Emotional Reactions

Seeing tears on self:

Visitors' emotional state after seeing the tears on their own face was assessed in two ways:

- 1) By asking visitors directly whether seeing the tears had affected the way they felt.
- 2) By asking them to indicate which *Self Assessment Mannequin* (See APPENDIX A) best represented their level of happiness or unhappiness.

Q 4a-1) Did seeing the tears on your face affect the way you felt? How?

4 of 11 visitors (36%) said that seeing tears on their face affected the way they felt. Of those, one had a strong physiological reaction.

One person said it was relaxing:

M, 40s: "I got a sensation of what a clown might feel like because it drips from the center of your eyes. I was wondering if it would make me tear, but I didn't, I thought of a rainy day."

"I don't know. It made me relax. [tell me more?] Because I had to concentrate, and this is a good excuse to get a break from my kids."

One person had a physical reaction:

F, 50s: "I sat down and when I saw the tears on my face I got tense inside."

"Well I felt good when I sat, but had a visceral reaction when I saw the tears."

Two visitors reported feeling sad:

*F, 9: "It was kind of cool because you can pretend that you're sad when you're really happy."
"It made me feel sad."*

F, 20s, ESL, not fluent: "Just a little, but just sad but not too much, like tries to stop all feeling. "

Self Reflection Mannequin mood responses, tears on self,

N=10. [1= happy, 9= unhappy]

mean	4.9
median	5
min	3
max	7
stdev	1.52

Visitors reported neither extreme happiness nor extreme unhappiness after seeing tears on their own face.

Seeing tears on others:

2 of the 5 people who saw another person with tears on their face reported a change in their emotions, but neither reported feeling sad in particular:

M, 40s: "I would say that it's a slightly stronger response, but not a strong effect. [what was your response?] A little something."

M, 20s: "More convincing, makes you double take." [tell me more?] It's weird that they look happy but there's tears." "More convincing, but no effect for me. "

Visitor Suggestions

4 visitors had suggestions for improving the exhibit.

Vary the drip rate:

M, 40s: "I thought that maybe slowing the drip rate so it's not.... Right now there's a rhythm and the two sides are synchronized- it takes away from reality."

Tell visitors to remove their glasses:

F, 50s: "Take glasses off is number one."

Make the tears more drop-like:

M, 50s: "The drops are not visible as drops, so you could have a different material or coating so it beads and drops, now it is a constant flow. Maybe silicon."

Make the exhibit more height adjustable:

M, 40s: "Definitely an adjustable height chair."

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APPENDIX A: Observation and interview instrument**Observations**

Recruit every third visitor 8 and up to cross an imaginary line. Bring them to the exhibit. If they want to use it in groups of 2 or three, that's okay too.

Okay, here's the exhibit. I'd like you to use it as you normally would, do what you want, take as long as you want. I'll be standing over here, so let me know when you're done and I'll ask some questions about how it worked for you.

We'd like people to use it on their own, but since it's a new exhibit, we expect that people will sometimes need help, so if you get stuck let me know and I'll try to help you out.

Note the following:

Start Time: _____ End Time: _____

Appear to read label? YES NO UNSURE

Did visitor sit? YES NO UNSURE

Trouble with chin rest? YES NO UNSURE
[If yes] What?

Positioned their face correctly (so that it is lit up) ? YES NO UNSURE

Switch places with another visitor and observe them? YES NO UNSURE

Needed help from evaluator to make tears appear YES NO

Other observations of note including overheard conversation:

Questions

1. How interesting did you find that exhibit?

Not interesting Somewhat Not interesting Neutral Somewhat Interesting Interesting

2. What made it _____ for you?

3. Was there anything confusing about the exhibit? What? [Probe to exhaustion.]

4. What did you try to do at the exhibit? [Probe to exhaustion: anything else you tried to do?]

- a. [if they don't mention it on their own] Did you try to make tears appear on your face?
[if no, skip to Q 5
 - i. [if YES] were you successful?
 - ii. [if made tears] Did seeing the tears on your face affect the way you felt?
How?
5. Did you watch anyone else make tears?
- a. Did seeing tears on their face affect the way you felt? How?

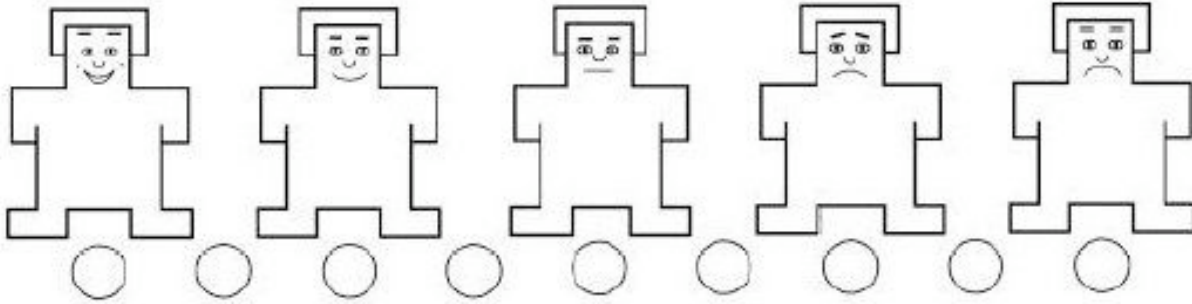
6. Will you mark on this piece of paper, how you felt when you saw the tears on exhibit?

How did you feel?

Please check one of the circles.

Happy

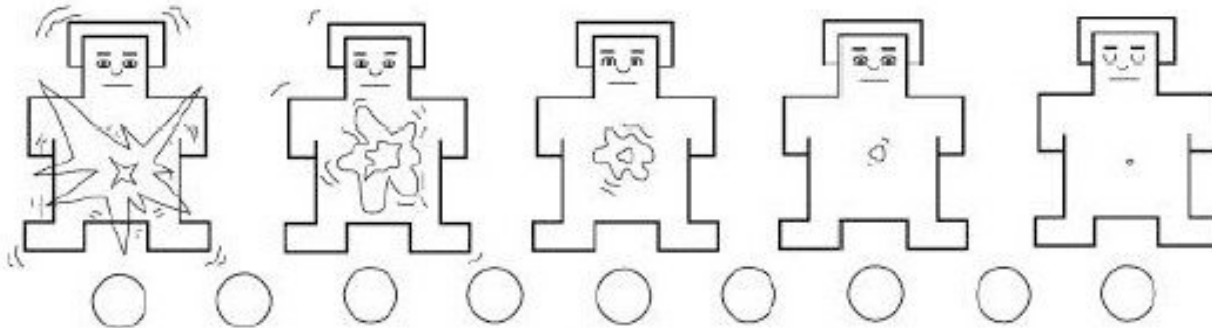
Unhappy



Please check one of the circles.

Energetic
High energy

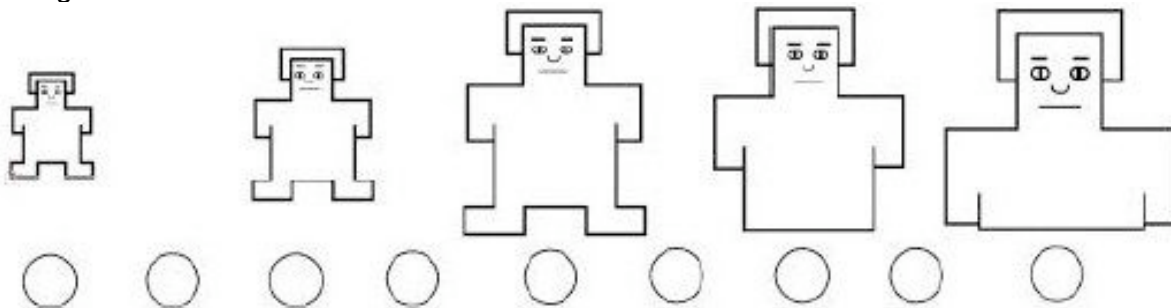
Sleepy
Low, no energy



Please check one of the circles.

Powerless
Being Controlled

Powerful
In Control



7. Do you have any suggestion for improving that exhibit?

8. Other comments?