Submission ID #: 61089
Scriptwriter Name: Bridget Colvin
Project Page Link: https://www.jove.com/account/file-uploader?src=18632193

Title: Loneliness Assuaged: Eye-Tracking an Audience Watching Barrage Videos

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Author Questionnaire

1. Microscopy: Does your protocol involve video microscopy, such as filming a complex dissection or microinjection technique? **N**

2. Software: Does the part of your protocol being filmed demonstrate software usage? **Y**

Video Editor: All screen capture files provided, do not film

3. Filming location: Will the filming need to take place in multiple locations (greater than walking distance)? **N**

Introduction

1. Introductory Interview Statements

REQUIRED:

1.1. **Guangyao Chen**: During barrage video studies, the focus is on the emotional needs of the audience. We can use eye tracking to objectively test the proposed match and satisfaction model **[1]**.

1.1.1. INTERVIEW: Named talent says the statement above in an interview-style shot, looking slightly off-camera

REQUIRED:

1.2. **Guanyao Chen**: Eye tracking documents watching behaviors in real time and allows the determination of where an audience is paying attention while watching rational and emotional and barrage vs non-barrage content **[1]**.

1.2.1. INTERVIEW: Named talent says the statement above in an interview-style shot, looking slightly off-camera

Introduction of Demonstrator on Camera

1.3. **Guangyao Chen**: Demonstrating the procedure will be Yao Shiwei, Liu Cong, and Chen Ruixue, master students from my laboratory **[1][2]**.

1.3.1. INTERVIEW: Author saying the above
1.3.2. The named demonstrator(s) looks up from workbench or desk or microscope and acknowledges the camera

Ethics Title Card

1.4. Procedures involving human subjects have been approved by the Institutional Review Board (IRB) at Jinan University.

Protocol

2. Participant Screening and Stimulus Construction

2.1. Before beginning an experiment, use the third edition of the UCLA scale of loneliness **[1-TXT]** to allow categorization of the participants into "lonely" and "normal" groups according to their score **[2]**.

2.1.1. WIDE: Talent gesturing to computer for Participant to fill out questionnaire **TEXT: See text for full inclusion/exclusion criteria** *Videographer: Important step*

2.1.2. Talent at computer, checking questionnaire or assigning participants to group(s), with monitor visible in frame

2.2. Select emotional and rational appeal, 1-minute, standalone video advertisements that do not require contextual information to comprehend **[1]**.

2.2.1. Talent at computer selecting/viewing ads, with monitor visible in frame

2.3. To ensure that the emotional and rational appeals are manipulated successfully, have non-participants view **[1]** and rate a pool of preselected ads based on these appeals **[2]**.

2.3.1. Talent(s) watching ad(s)
2.3.2. Talent rating ad

2.4. To maximize manipulation, select videos with the highest scores in either category as the experimental stimuli **[1]**.

2.4.1. Shot of videos with scores, with highest score video circled or otherwise indicated

2.5. Use video editing software to convert the barrage into subtitles so that comments can be manually added to the video barrage area **[1]**.

2.5.1. SCREEN: 2.5.2: 00:02-00:44 *Video Editor: please speed up*

2.6. The ready-made video can then be called in the data-collection process **[1]**.

2.6.1. SCREEN: 2.6.2: 00:00-00:10

2.7. To randomize the presentational effects, produce four presentation orders for the experiment **[1]**.

2.7.1. SCREEN: 2.7.1: 00:00-00:08

3. Eye Tracking Protocol

3.1. After selecting a commercial eye tracker **[1]**, set the default setting for the tracker gaze sample rate at 60 hertz/second **[2] [3]**.

3.1.1. WIDE: Talent pointing to Tobii tracker
3.1.2. NOTE: Move 3.1.2 after 3.3.2.

3.2. Attach the eye tracker to the computer **[1]** and ask the Participant to read and sign an informed consent form **[2]**.

3.2.1. Talent attaching tracker to computer
3.2.2. Talent giving consent form to Participant

3.3. When the Participant has given consent, have the Participant sit comfortably in front of the test computer **[1]** and check and adjust the chair height **[2]** as necessary so that the TV screen is at the Participant's eye level **[3.1.2]**.

3.3.1. Talent gesturing/Participant sitting in chair
3.3.2. Talent checking/adjusting chair height
3.1.2. NOTE: 3.1.2 moved here. Talent placing computer screen 50 cm from Participants' eyes.

3.4. Inform the Participant that a 5-point calibration is necessary to achieve the highest accuracy in data collection and to track the Participant's gaze within 2 degrees of accuracy **[1]** and instruct the Participant to sit still **[2]** while following a moving red dot on the computer screen with both eyes, fixating on the dot when it stops **[3-TXT]**.

3.4.1. Talent informing/Participant listening and/or nodding
3.4.2. Participant sitting still while looking at screen, with monitor visible in frame as possible
3.4.3. SCREEN: 3.4.3: 00:14-00:19 **TEXT: Repeat if participant looks away during calibration**

3.5. After the calibration, check the tracker software to see if the Participant missed a calibration point **[1-TXT]** and have the Participant click the left mouse button to start a practice test **[2]**.

3.5.1. SCREEN: 3.5.1: 00:01-00:03 **TEXT: Repeat if missed calibration point**
3.5.2. Participant clicking mouse/starting test

3.6. After the practice test, start the main experiment **[1]** and inform the Participant that they will see a red plus sign in the middle of the screen for 500 milliseconds **[2]**, indicating the start of the experiment **[3]**.

3.6.1. Talent starting experiment
3.6.2. Talent indicating middle of screen
3.6.3. SCREEN: 3.6.3: 00:02-00:12

3.7. Instruct the Participant to watch the first video while the eye tracking is on **[1]**.

3.7.1. Participant watching/eye being tracked

3.8. After the first video, have the Participant complete the questionnaire that will automatically pop up **[1]**.

3.8.1. SCREEN: 3.8.1.

3.9. After completing the questionnaire, have the Participant click the left mouse button **[1]** and complete a battery of evaluative measures on their satisfaction with the video **[2]**.

3.9.1. Talent clicking button
3.9.2. SCREEN: 3.9.2: 00:00-00:15

3.10. After rating the first video, ask the Participant if they would prefer to take a break or to continue on to another video **[1]**.

3.10.1. Talent gesturing that Participant can get up from chair then gesturing toward computer and Participant either getting up or turning toward computer

3.11. Then repeat the advertisement viewing and rating procedure seven more times **[1]** before thanking, debriefing, and paying the Participant for their time **[2]**.

3.11.1. Talent starting video, with Participant watching
3.11.2. Talent shaking Participant hand and/or paying Participant

4. Eye-Tracking and Self-Reported Data Analyses

4.1. To analyze the eye-tracking data, slice the entire recording into eight segments corresponding to each ad watching segment **[1]**. Each clip should contain the original ad and eye movement data **[2]**.

4.1.1. WIDE: Talent at computer, slicing recording, with monitor visible in frame
4.1.2. SCREEN: 4.1.2: 00:00-00:10

4.2. In the sliced video, use the tracker software to draw an area of interest to distinguish between the eye movement data in the barrage **[1]** and non-barrage areas **[2]**.

4.2.1. SCREEN: 4.2.1: 00:00-00:33 *Video Editor: please speed up*
4.2.2. SCREEN: 4.2.1: 00:38-01:04 *Video Editor: please speed up*

4.3. Then count the number of fixations for each video segment **[1]** and separate them into barrage and non-barrage area of interest fixations **[2]**.

4.3.1. Talent counting fixations, with monitor visible in frame
4.3.2. SCREEN: 4.3.2: 00:05-00:42 *Video Editor: please speed up*

4.4. To calculate the eye fixation durations, compare the duration and number of fixations at the barrage area of interest relative to the entire scene **[1]** to allow inference of where the participants were focusing and of which elements were being paid attention to while watching the videos **[2]**.

4.4.1. SCREEN: 4.4.1: 00:50-01:10 *Video Editor: please speed up*
4.4.2. LAB MEDIA: Figure 4

4.5. Then analyze the self-reported data to determine the participants' satisfaction toward each video **[1]**.

4.5.1. Talent at computer, analyzing participant satisfaction data

Protocol Script Questions

A. Which steps from the protocol are the most important for viewers to see?
2.1.

B. What is the single most difficult aspect of this procedure and what do you do to ensure success?

n/a

Results

5. Results: Representative Participant Fixation and Satisfaction in Response to Emotional and Rational Advertisement Viewing

5.1. Repeated measure multivariate analyses of variance can be conducted using duration and fixation as dependent variables to indicate attention **[1]**.

5.1.1. LAB MEDIA: Figure 4

5.2. As confirmed by these results, lonely participants' gazes stay on barrage areas longer **[1]** than on non-barrage areas when emotional ads are presented **[2]**.

5.2.1. LAB MEDIA: Figure 4 *Video Editor: please emphasize loneliness E-BVa data bars*
5.2.2. LAB MEDIA: Figure 4 *Video Editor: please emphasize loneliness E-NBVa data bars*

5.3. When rational ads are viewed, however, no such difference is observed **[1]**.

5.3.1. LAB MEDIA: Figure 4 *Video Editor: please emphasize loneliness R-BVa data bars*
5.3.2. LAB MEDIA: Figure 4 *Video Editor: please emphasize loneliness R-NBVa data bars*

5.4. This pattern was not replicated for low loneliness participants **[1]**, whose attention remained statistically non-significant **[2]** when watching emotional or rational ads **[3]**.

5.4.1. LAB MEDIA: Figure 4 *Video Editor: please emphasize Normal data bars*
5.4.2. LAB MEDIA: Figure 4 *Video Editor: please outline Normal E-Bva and E-NBVa data bars*
5.4.3. LAB MEDIA: Figure 4 *Video Editor: please outline Normal R-Bva and R-NBVa data bars*

5.5. In addition, participant satisfaction with the observed videos largely replicated the duration and fixation results **[1]**, with lonely audiences reporting a level of satisfaction when watching emotional ads **[2]** over rational ads **[3]** and with no statistical differences reported for either interaction in non-lonely audiences **[4]**.

5.5.1. LAB MEDIA: Table 1

5.5.2. LAB MEDIA: Table 1 *Video Editor: please emphasize Loneliness Story-based ads data cells*

5.5.3. LAB MEDIA: Table 1 *Video Editor: please emphasize Loneliness Hard-selling ads data cells*

5.5.4. LAB MEDIA: Table 1 *Video Editor: please emphasize Normal data cells*

Conclusion

6. Conclusion Interview Statements

6.1. **Guanyao Chen**: The person who adds the barrage should be someone who watches the barrage videos, added content, and format to be sure to conform to the characteristics of the normal barrage **[1]**.

6.1.1. INTERVIEW: Named talent says the statement above in an interview-style shot, looking slightly off-camera (2.5.)