# Appendix

## A Study Protocol

Before starting the experiment, an explanation of the study protocol, illustrated in Figure 5, was given to each participant. The experiment consisted in participants watching 9 videos and performing 7 tasks, as listed in Table 2. Details of the videos are provided in Table 12. We informed participants that each target emotion would be experienced only once during session A. This ensured that, after viewing a disturbing video, such as one eliciting disgust or fear, they would not anticipate encountering a similar emotional stimulus in the remaining videos. Between each stimulus, a washout video of clouds was shown to mitigate any emotional carry-over effect. Washouts lasted 40 seconds in session A and 1 minute in session B.

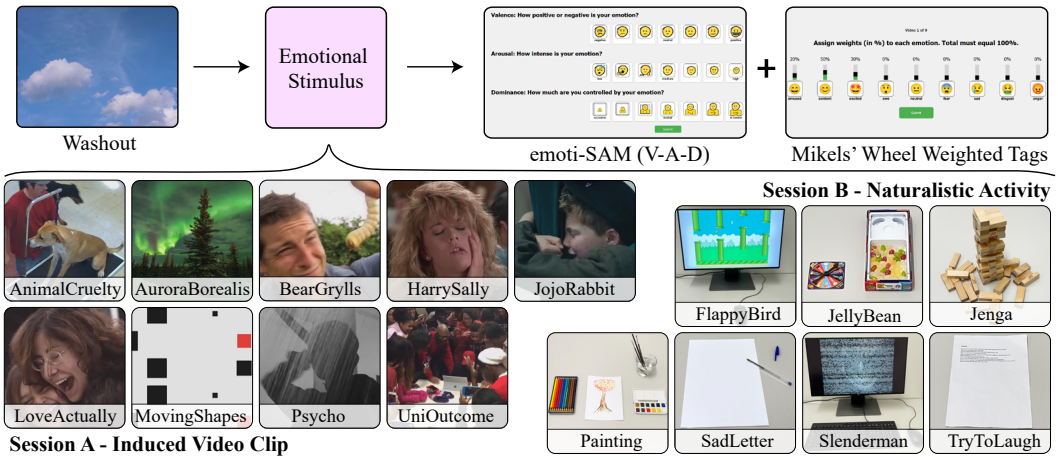



Figure 5: **Overview of the experimental protocol**. The experiment consisted of two sessions. In session A, participants watched 9 video clips, with a 40 s washout between clips and a 5 s video of a cross preceding each clip. In session B, participants performed 7 real-world tasks. Each task was spaced by a 1-min washout clip. Two questionnaires, corresponding to the emoti-SAM [20] and a weighted Mikels' Wheel [41] were answered after each emotional stimulus.

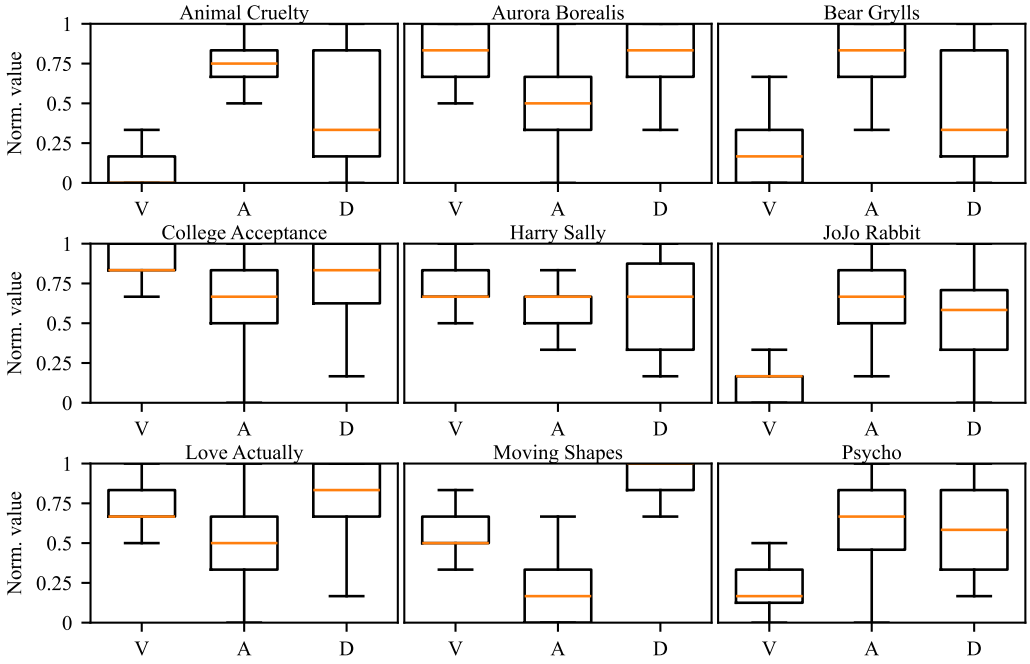
Following each emotional stimulus, participants rated their emotions using an emoti-SAM [20] and a weighted Mikels' Wheel [41], as shown in Figure 6. To familiarise the participant with each questionnaire, we explained what each term in the emoti-SAM meant i.e., *arousal*, *valence*, *dominance* and provided a definition for each emotion on Mikels' Wheel. In addition, we gave two examples of emotions and their associated self-reports. For the weighted Mikels' Wheel questionnaire, we indicated to the participant that they could gauge the intensity of their emotion using the neutral emotion. For example, if only feeling a single emotion but in low intensity, the participant could distribute the remaining weights in the neutral emotion. (e.g., 20% amused and 80% neutral indicates low amusement).


Figure 6: **Close-up view of the self-report questionnaires**. In the emoti-SAM [20], participants rated their arousal, valence and dominance using a 7-point scale. In the weighted Mikels' Wheel [41], participants distributed a 100% weight across emotions in 10% increments.

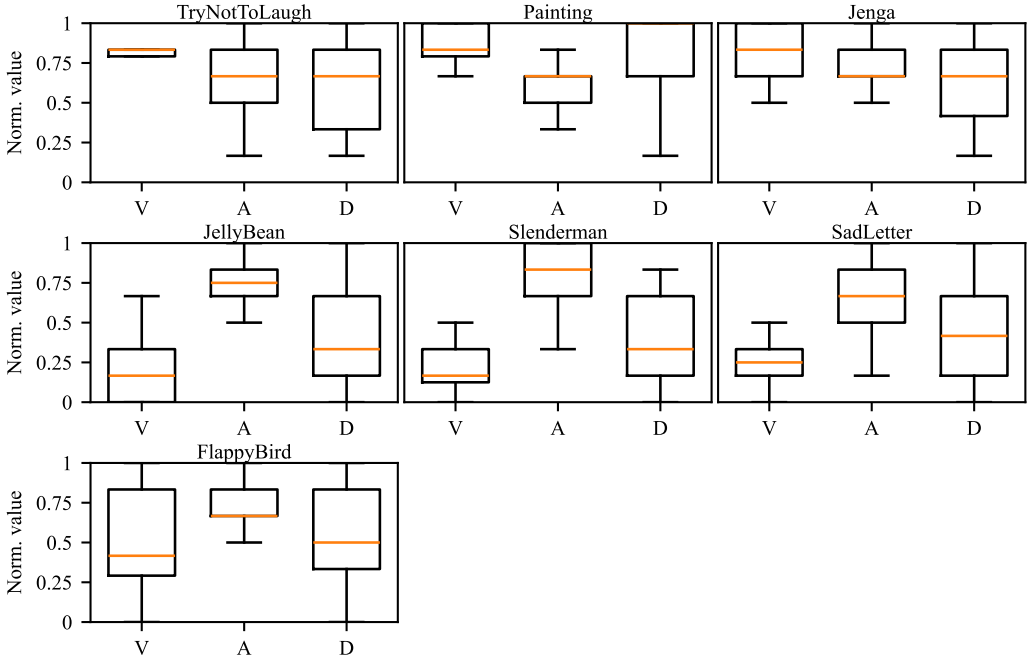
# B Additional Dataset Descriptives

## B.1 Mean self-ratings per task

The normalized continuous affect self-ratings for all video clips, averaged across participants, is displayed in Figure 7a. Similarly, the mean continuous affect self-ratings for the naturalistic activities of session B are displayed in Figure 7b.




(a)




(b)

Figure 7: Box plots of affect self-ratings **a)** per video clip **b)** per naturalistic task.

### B.2 Self-correlations of continuous self-ratings

Figure 8 presents the Pearson correlation matrices between continuous affect self-ratings (A-V-D) across sessions A, B and A+B. Across all sessions, a strong negative relationship between arousal and dominance was observed, as well as a moderate positive relationship between valence and dominance. This indicated participants associated intense emotions with low dominance and vice-versa, while associating negative emotions to low dominance.

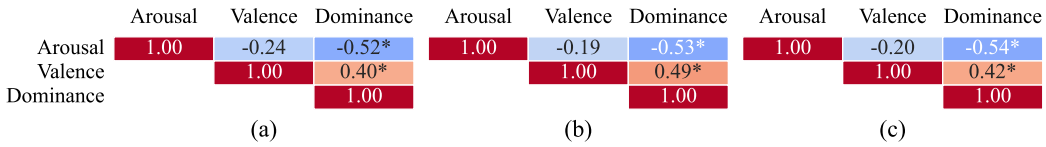



Figure 8: Pearson correlations between continuous self-ratings in **a)** session A **b)** session B **c)** session A+B.

### B.3 Self-correlations of discrete emotions

Figures 9, 10, 11 present the Pearson correlation matrices between discrete emotions across sessions A, B and A+B, respectively. The video clips of session A resulted in significant negative relationships between the neutral emotions and all other emotions excluding amused and disgust. Fear had a positive correlation with excitement and anger, while anger had a negative relationship with disgust. In session B, amusement had a strong negative correlation with anger and a moderate negative correlation with disgust.

| | Amused | Content | Excited | Awe | Neutral | Fear | Sad | Disgust | Anger |
|---|---|---|---|---|---|---|---|---|---|
| Amused | 1.00* | 0.00 | -0.18 | -0.10 | -0.19 | -0.13 | -0.07 | -0.08 | -0.09 |
| Content | | 1.00* | -0.24 | -0.23 | -0.33* | 0.02 | 0.07 | -0.15 | 0.20 |
| Excited | | | 1.00* | 0.07 | -0.47* | 0.33* | 0.10 | 0.05 | 0.27 |
| Awe | | | | 1.00* | -0.41* | 0.29 | 0.03 | 0.11 | 0.10 |
| Neutral | | | | | 1.00* | -0.54* | -0.33* | -0.16 | -0.43* |
| Fear | | | | | | 1.00* | 0.00 | -0.24 | 0.32* |
| Sad | | | | | | | 1.00* | 0.27 | -0.14 |
| Disgust | | | | | | | | 1.00* | -0.37* |
| Anger | | | | | | | | | 1.00* |

Figure 9: Pearson correlations between discrete emotions (session A).

| | Amused | Content | Excited | Awe | Neutral | Fear | Sad | Disgust | Anger |
|---|---|---|---|---|---|---|---|---|---|
| Amused | 1.00* | 0.11 | 0.02 | 0.02 | -0.29 | -0.18 | -0.02 | -0.38* | -0.66* |
| Content | | 1.00* | -0.20 | -0.28 | -0.25 | -0.33* | 0.05 | -0.10 | -0.17 |
| Excited | | | 1.00* | -0.27 | -0.26 | -0.22 | 0.13 | 0.07 | -0.02 |
| Awe | | | | 1.00* | -0.11 | 0.37* | -0.06 | -0.13 | -0.09 |
| Neutral | | | | | 1.00* | -0.33* | -0.60* | -0.03 | -0.05 |
| Fear | | | | | | 1.00* | 0.33* | -0.07 | 0.15 |
| Sad | | | | | | | 1.00* | -0.07 | 0.03 |
| Disgust | | | | | | | | 1.00* | 0.20 |
| Anger | | | | | | | | | 1.00* |

Figure 10: Pearson correlations between discrete emotions (session B).

Fear had a moderate positive relationship with content and neutral, while having a negative relationship with awe and sadness. Finally, sadness had a strong positive relationship with the neutral emotion.

After combining the self-reports of discrete emotions from session A and B, amusement was negatively correlated with disgust and anger, while fear was positively correlated with awe. The neutral emotion was negatively correlated with excitement, awe, fear, sadness and anger.

| | Amused | Content | Excited | Awe | Neutral | Fear | Sad | Disgust | Anger |
|---|---|---|---|---|---|---|---|---|---|
| Amused | 1.00* | 0.07 | -0.21 | -0.17 | -0.14 | -0.16 | 0.04 | -0.39* | -0.36* |
| Content | | 1.00* | -0.29 | -0.23 | -0.29 | -0.19 | 0.07 | -0.09 | -0.13 |
| Excited | | | 1.00* | -0.07 | -0.33* | 0.13 | 0.25 | 0.15 | 0.28 |
| Awe | | | | 1.00* | -0.33* | 0.35* | 0.06 | 0.01 | 0.21 |
| Neutral | | | | | 1.00* | -0.48* | -0.57* | -0.17 | -0.42* |
| Fear | | | | | | 1.00* | 0.20 | -0.11 | 0.26 |
| Sad | | | | | | | 1.00* | 0.07 | 0.08 |
| Disgust | | | | | | | | 1.00* | 0.31 |
| Anger | | | | | | | | | 1.00* |

Figure 11: Pearson correlations between discrete emotions (session A+B).

### B.4 Self-correlations of personality traits

Figure 12 presents the Pearson correlations between personality traits. No significant correlation was found between personality traits.

| | Ex | Ag | Co | NE | OM |
|---|---|---|---|---|---|
| Ex | 1.00 | 0.20 | 0.17 | -0.28 | 0.13 |
| Ag | | 1.00 | 0.12 | -0.09 | -0.08 |
| Co | | | 1.00 | -0.26 | -0.02 |
| NE | | | | 1.00 | 0.28 |
| OM | | | | | 1.00 |

Figure 12: Pearson correlations between personality traits.

### B.5 Correlations between continuous self-ratings and personality traits.

Figures 13a and 13b display the correlations between the continuous self-ratings and personality traits in session A and session B, respectively. In session A, significant negative correlations are found between dominance and *Ex* and *Co*, as well as arousal and *OM*. In session B, a negative relationship between dominance and *Co* was observed.

| | Ex | Ag | Co | NE | OM |
|---|---|---|---|---|---|
| Arousal | 0.20 | 0.20 | 0.20 | -0.30 | -0.42* |
| Valence | -0.07 | -0.13 | -0.01 | -0.01 | 0.03 |
| Dominance | -0.31* | -0.12 | -0.34* | 0.17 | 0.22 |

(a)

| | Ex | Ag | Co | NE | OM |
|---|---|---|---|---|---|
| Arousal | -0.01 | 0.10 | -0.10 | 0.07 | 0.08 |
| Valence | -0.10 | -0.05 | -0.30 | 0.20 | 0.30 |
| Dominance | -0.24 | -0.16 | -0.37* | -0.05 | 0.09 |

(b)

Figure 13: Pearson correlations between continuous self-ratings and personality scores in **a)** session A **b)** session B.

### B.6 Correlations between continuous self-ratings and discrete emotions.

Figures 14a and 14b present the Pearson correlations between continuous self-ratings and discrete emotions in session A and session B, respectively. In session A, arousal was positively correlated with excitement, fear, sadness and anger, while being negatively correlated with the neutral emotion. Valence was positively correlated with amusement and negatively correlated with disgust. In session B, arousal was positively correlated with excitement and negatively correlated with the neutral emotion. Valence was strongly positively correlated to amusement, while being strongly negatively correlated with fear and anger. Dominance was negatively correlated with fear, sadness and disgust, while being positively correlated with the neutral emotion.

| | Amused | Content | Excited | Awe | Neutral | Fear | Sad | Disgust | Anger |
|---|---|---|---|---|---|---|---|---|---|
| Arousal | 0.03 | 0.06 | 0.39* | 0.18 | -0.63* | 0.32* | 0.41* | 0.28 | 0.32* |
| Valence | 0.49* | 0.27 | 0.01 | -0.17 | -0.02 | -0.26 | -0.24 | -0.34* | -0.04 |
| Dominance | -0.18 | -0.03 | 0.00 | -0.02 | 0.25 | -0.18 | 0.03 | -0.16 | -0.24 |

(a)

| | Amused | Content | Excited | Awe | Neutral | Fear | Sad | Disgust | Anger |
|---|---|---|---|---|---|---|---|---|---|
| Arousal | -0.06 | -0.13 | 0.37* | 0.07 | -0.42* | 0.22 | 0.25 | 0.22 | 0.10 |
| Valence | 0.65* | 0.39* | 0.18 | -0.08 | -0.05 | -0.55* | -0.20 | -0.27 | -0.62* |
| Dominance | 0.06 | 0.08 | -0.30 | 0.09 | 0.44* | -0.32* | -0.32* | -0.32* | -0.04 |

(b)

Figure 14: Pearson correlations between continuous self-ratings and discrete emotions in **a)** session A **b)** session B.

### B.7 Pearson correlations between personality scores and discrete emotions.

Figures 15a and 15b present the Pearson correlations between personality traits and discrete emotions in session A and session B, respectively. In session A, significant positive correlations were observed between *Ag* and sadness and disgust. In session B, *Ex* was positively correlated with content. *Ag* was positively correlated with sadness and negatively correlated with awe.

| | Amused | Content | Excited | Awe | Neutral | Fear | Sad | Disgust | Anger |
|---|---|---|---|---|---|---|---|---|---|
| Ex | 0.23 | 0.13 | 0.09 | -0.15 | -0.27 | -0.11 | 0.08 | 0.30 | 0.22 |
| Ag | -0.05 | -0.02 | -0.05 | -0.05 | -0.12 | -0.02 | 0.35* | 0.42* | -0.02 |
| Co | -0.11 | 0.06 | 0.13 | 0.14 | -0.22 | 0.15 | 0.14 | 0.19 | -0.06 |
| NE | -0.10 | -0.01 | -0.09 | -0.06 | 0.15 | 0.04 | -0.04 | -0.15 | -0.01 |
| OM | 0.03 | -0.07 | -0.02 | -0.13 | 0.15 | -0.22 | -0.10 | 0.15 | -0.06 |

(a)

| | Amused | Content | Excited | Awe | Neutral | Fear | Sad | Disgust | Anger |
|---|---|---|---|---|---|---|---|---|---|
| Ex | -0.05 | 0.32* | -0.04 | -0.16 | -0.24 | -0.06 | 0.28 | -0.08 | 0.17 |
| Ag | -0.10 | 0.13 | 0.07 | -0.35* | -0.12 | -0.02 | 0.42* | 0.08 | 0.06 |
| Co | -0.21 | 0.06 | 0.06 | -0.02 | -0.05 | 0.08 | 0.03 | -0.07 | 0.23 |
| NE | 0.05 | -0.13 | 0.21 | 0.18 | -0.20 | -0.01 | 0.02 | 0.24 | -0.04 |
| OM | 0.17 | 0.15 | 0.04 | 0.17 | -0.10 | -0.17 | -0.25 | -0.18 | 0.03 |

(b)

Figure 15: Pearson correlation between personality scores and discrete emotions in **a)** session A **b)** session B.

# C Additional Descriptions

## C.1 Detailed Description of Baseline Features

A detailed overview of the features extracted from each modality is presented in Table 5.

Table 5: **Overview of features extracted from the recorded physiological time-series signals.** Recorded physiological signals include respiration rate, ECG, EDA, PPG recorded using a nosepad sensor and acceleration magnitude from the Aria-integrated IMU sensor. We further compute statistical descriptors of the time-series signals inferred from the video data captured by the eye-tracking cameras, including pupil size, video pixel intensity, and Fisherface feature coefficients.

| Time-series signal | Features extracted |
|---|---|
| Acceleration Magnitude (Aria IMU) | Mean, min, max, standard deviation, median, 5th and 95th percentiles, range, interquartile range, sum, energy, skewness, kurtosis, RMS, and line integral. |
| Blinking (ET camera) | Number of blinks of the left eye and the right eye. |
| ECG | Root mean square of the mean squared IBIs, mean IBI, 60 spectral power values in the [0–6] Hz band of the ECG signal, low-frequency [0.01–0.08] Hz, medium-frequency [0.08–0.15] Hz, and high-frequency [0.15–0.5] Hz components of HRV spectral power, HR and HRV statistics. |
| EDA | Mean skin resistance and mean of derivative, mean differential for negative values only (mean decrease rate during decay time), proportion of negative derivative samples, number of local minima in the GSR signal, average rising time of the GSR signal, spectral power in the [0–2.4] Hz band, zero crossing rate of skin conductance slow response (SCSR) [0–0.2] Hz, zero crossing rate of skin conductance very slow response (SCVSR) [0–0.08] Hz, mean SCSR and SCVSR peak magnitude. |
| Eye Gaze (Yaw and Pitch) | Mean, min, max, standard deviation, median, 5th and 95th percentiles, range, interquartile range, sum, energy, skewness, kurtosis, RMS, and line integral. |
| Fisherface Features (ET camera) | Mean, min, max, standard deviation, median, 5th and 95th percentiles, range, interquartile range, sum, energy, skewness, kurtosis, RMS, and line integral. |
| Micro-expressions (ET camera) | Mean of each LBP-TOP feature. |
| PPG (Nosepad Sensor) | Root mean square of the mean squared IBIs, mean IBI, 60 spectral power values in the [0–6] Hz band of the PPG signal, low-frequency [0.01–0.08] Hz, medium-frequency [0.08–0.15] Hz, and high-frequency [0.15–0.5] Hz components of HRV spectral power, HR and HRV statistics. |
| Pupil Size (ET camera) | Mean, min, max, standard deviation, median, 5th and 95th percentiles, range, interquartile range, sum, energy, skewness, kurtosis, RMS, and line integral. |
| RSP | Band energy ratio (difference between the logarithm of energy between the lower (0.05–0.25 Hz) and the higher (0.25–5 Hz) bands), average respiration signal, mean of derivative (variation of the respiration signal), standard deviation, range or greatest breath, breathing rhythm (spectral centroid), breathing rate, 10 spectral power values in the bands from 0 to 2.4 Hz, average peak-to-peak time, median peak-to-peak time. |
| Video Pixel Intensity (ET camera) | Mean, min, max, standard deviation, median, 5th and 95th percentiles, range, interquartile range, sum, energy, skewness, kurtosis, RMS, and line integral. |

## C.2 Continuous Affect Prediction

Table 6 presents the continuous affect domain prediction results for session A and session B. The egocentric glasses provided better predictions of the continuous affect self-reports than the physiological sensors. The glasses had a $F_1$ score of 0.72 and 0.73 in session A and B, respectively, while the physiological sensors reported an $F_1$ score of 0.68 in session A and session B. Notably, all sensors had a strong performance when predicting arousal in session B.

Table 7 presents the standard deviation results of the continuous affect domain predictions across all sessions. Session A displays greater variability, particularly within the arousal and dominance self-reports. In contrast, Session B demonstrates lower and more uniform standard deviations across all modalities. When aggregating session A with session B, the lowest standard deviations are achieved.

Table 6: **Continuous affect domain prediction results.**

| | | **Wearable devices** | | | | **Egocentric glasses** (ET video) | | | | | | | | | **All** | **Baseline** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Session | Domain | ECG | EDA | RSP | ⋈ | Pup. | Int. | F.f. | Gaze | Blink | $\mu$-E. | PPG | IMU | ⋈ | ⋈ | Random |
| | Arousal | 0.64 | 0.65 | 0.60 | 0.63 | 0.67 | 0.62 | 0.64 | 0.69 | 0.66 | 0.64 | 0.64 | 0.65 | 0.68 | **0.69** | 0.56 |
| **A** | Valence | 0.71 | 0.68 | 0.62 | 0.71 | 0.71 | 0.66 | **0.78** | 0.64 | 0.71 | 0.63 | 0.77 | 0.66 | **0.78** | **0.78** | 0.56 |
| | Dominance | 0.70 | 0.70 | 0.71 | 0.71 | 0.68 | **0.72** | 0.68 | 0.71 | 0.72 | 0.71 | 0.69 | 0.71 | 0.71 | 0.71 | 0.61 |
| | **Mean** | 0.68 | 0.68 | 0.65 | 0.68 | 0.69 | 0.67 | 0.70 | 0.68 | 0.70 | 0.66 | 0.71 | 0.68 | 0.72 | **0.73** | 0.58 |
| | Arousal | **0.83** | **0.83** | **0.83** | **0.83** | **0.83** | **0.83** | **0.83** | **0.83** | **0.83** | **0.83** | **0.83** | **0.83** | **0.83** | **0.83** | 0.74 |
| **B** | Valence | 0.64 | 0.57 | 0.62 | 0.68 | 0.72 | 0.66 | **0.78** | 0.66 | 0.70 | 0.67 | 0.71 | 0.71 | 0.77 | 0.72 | 0.53 |
| | Dominance | 0.51 | 0.50 | 0.55 | 0.54 | 0.56 | 0.55 | 0.58 | 0.44 | 0.56 | 0.60 | 0.58 | 0.46 | **0.59** | 0.57 | 0.50 |
| | **Mean** | 0.66 | 0.63 | 0.67 | 0.68 | 0.70 | 0.68 | **0.73** | 0.64 | 0.70 | 0.70 | 0.71 | 0.65 | **0.73** | 0.71 | 0.59 |

⋈ = fusion of modalities, Pup. = Pupil size, Int. = Pixel Intensity, F.f. = Fisherface features, $\mu$-E. = micro-expressions.

Table 7: **Standard deviation of continuous affect domain prediction results.**

| | | **Wearable devices** | | | | **Egocentric glasses** (ET video) | | | | | | | | | **All** | **Baseline** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Session | Domain | ECG | EDA | RSP | ⋈ | Pup. | Int. | F.f. | Gaze | Blink | $\mu$-E. | PPG | IMU | ⋈ | ⋈ | Random |
| | Arousal | 0.22 | 0.22 | 0.20 | 0.20 | 0.22 | 0.22 | 0.22 | 0.24 | 0.23 | 0.22 | 0.21 | 0.24 | 0.22 | 0.20 | |
| **A** | Valence | 0.12 | 0.10 | 0.16 | 0.15 | 0.27 | 0.19 | 0.08 | 0.15 | 0.05 | 0.10 | 0.08 | 0.11 | 0.14 | 0.14 | |
| | Dominance | 0.23 | 0.24 | 0.24 | 0.24 | 0.22 | 0.23 | 0.22 | 0.24 | 0.24 | 0.24 | 0.23 | 0.24 | 0.24 | 0.24 | |
| | **Mean** | 0.19 | 0.19 | 0.20 | 0.20 | 0.24 | 0.21 | 0.17 | 0.21 | 0.17 | 0.19 | 0.17 | 0.20 | 0.20 | 0.20 | |
| | Arousal | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | 0.16 | |
| **B** | Valence | 0.16 | 0.16 | 0.16 | 0.15 | 0.14 | 0.13 | 0.14 | 0.16 | 0.19 | 0.18 | 0.15 | 0.18 | 0.14 | 0.14 | |
| | Dominance | 0.23 | 0.26 | 0.23 | 0.25 | 0.25 | 0.22 | 0.26 | 0.25 | 0.23 | 0.26 | 0.22 | 0.22 | 0.26 | 0.22 | |
| | **Mean** | 0.18 | 0.19 | 0.18 | 0.19 | 0.18 | 0.17 | 0.19 | 0.19 | 0.19 | 0.20 | 0.18 | 0.19 | 0.19 | 0.17 | |
| | Arousal | 0.14 | 0.13 | 0.13 | 0.14 | 0.14 | 0.14 | 0.13 | 0.14 | 0.14 | 0.13 | 0.14 | 0.13 | 0.15 | 0.14 | |
| **A+B** | Valence | 0.10 | 0.11 | 0.10 | 0.09 | 0.10 | 0.10 | 0.06 | 0.09 | 0.09 | 0.09 | 0.09 | 0.10 | 0.10 | 0.09 | |
| | Dominance | 0.18 | 0.18 | 0.17 | 0.18 | 0.17 | 0.19 | 0.16 | 0.19 | 0.19 | 0.20 | 0.17 | 0.18 | 0.18 | 0.17 | |
| | **Mean** | 0.14 | 0.14 | 0.13 | 0.14 | 0.14 | 0.14 | 0.12 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.13 | |

⋈ = fusion of modalities, Pup. = Pupil size, Int. = Pixel Intensity, F.f. = Fisherface features, $\mu$-E. = micro-expressions.

### C.3 Discrete Emotion Prediction

Table 8 presents the discrete emotion prediction results in session A and session B. The egocentric glasses significantly exceeded the physiological sensors in predicting 9 discrete emotions ($F_1 = 0.55$ vs. $F_1 = 0.25$) in session A. In the naturalistic tasks, the egocentric glasses and the wearable devices had comparable results, with $F_1 = 0.40$ and $F_1 = 0.33$, respectively. With the current feature extraction, emotions such as sadness (0.87) and anger (0.68) had high prediction scores in session A using the combined sensors from the egocentric glasses. The emotion of awe proved to be difficult to predict across experiments, with discrete emotions in session A achieving higher prediction results in comparison to session B. Disgust has a high $F_1$ score in session B (0.75) when predicting it from the egocentric glasses. The eye pupil size was highly informative for predicting fear in participants during session B ($F_1 = 0.66$).

Table 9 presents the standard deviations of the discrete emotion prediction results. Session A tends to be noisier, with larger fluctuations in certain cases (e.g., IMU and F.f.), while Session B looks more consistent overall.

Table 8: **Discrete emotion prediction results.**

| | | Wearable devices | | | | Egocentric glasses (ET video) | | | | | | | | All | Baseline |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Session | Domain | ECG | EDA | RSP | ⋈ | Pup. | Int. | F.f. | Gaze | Blink | $\mu$-E. | PPG | IMU | ⋈ | Random |
| | Amused | 0.05 | 0.52 | 0.37 | 0.50 | 0.60 | 0.19 | **0.62** | 0.47 | 0.17 | 0.17 | 0.52 | 0.54 | 0.52 | 0.57 | 0.12 |
| | Content | 0.25 | 0.19 | 0.20 | 0.26 | 0.38 | 0.13 | 0.56 | 0.26 | 0.13 | 0.13 | 0.44 | 0.40 | **0.61** | **0.61** | 0.16 |
| | Excited | 0.00 | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.25 | 0.00 | 0.06 | 0.00 | 0.07 | 0.00 | **0.29** | 0.24 | 0.05 |
| | Awe | 0.05 | 0.00 | 0.07 | 0.00 | **0.38** | 0.06 | 0.28 | 0.00 | 0.05 | 0.05 | 0.00 | 0.06 | 0.25 | 0.34 | 0.07 |
| **A** | Neutral | 0.23 | 0.36 | 0.31 | 0.32 | 0.40 | 0.24 | 0.49 | 0.44 | 0.27 | 0.32 | 0.37 | 0.41 | 0.51 | **0.52** | 0.21 |
| | Fear | 0.00 | 0.24 | 0.00 | 0.06 | 0.48 | 0.08 | 0.52 | 0.11 | 0.00 | 0.00 | **0.60** | 0.12 | 0.57 | 0.53 | 0.06 |
| | Sad | 0.25 | 0.82 | 0.23 | **0.88** | 0.77 | 0.07 | 0.85 | 0.68 | 0.13 | 0.13 | **0.88** | 0.75 | 0.87 | 0.87 | 0.10 |
| | Disgust | 0.07 | 0.18 | 0.17 | 0.12 | 0.20 | 0.19 | 0.47 | 0.09 | 0.15 | 0.16 | 0.57 | 0.27 | **0.63** | 0.60 | 0.13 |
| | Anger | 0.12 | 0.00 | 0.12 | 0.14 | 0.32 | 0.08 | 0.66 | 0.06 | 0.16 | 0.05 | 0.14 | 0.12 | **0.68** | **0.68** | 0.09 |
| | **Mean** | 0.11 | 0.26 | 0.16 | 0.25 | 0.40 | 0.12 | 0.52 | 0.23 | 0.12 | 0.11 | 0.40 | 0.30 | **0.55** | **0.55** | 0.11 |
| | Amused | 0.57 | 0.50 | 0.58 | 0.60 | 0.50 | 0.48 | **0.62** | 0.44 | 0.44 | 0.51 | 0.58 | 0.52 | 0.61 | 0.60 | 0.32 |
| | Content | 0.44 | 0.19 | 0.38 | 0.48 | 0.24 | 0.24 | **0.58** | 0.24 | 0.18 | 0.28 | 0.46 | 0.28 | 0.57 | 0.57 | 0.15 |
| | Excited | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.11 | 0.00 | 0.13 | 0.00 | 0.00 | 0.00 | **0.19** | 0.10 | 0.05 |
| | Awe | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | **0.01** |
| **B** | Neutral | 0.04 | **0.25** | 0.13 | 0.05 | 0.10 | 0.14 | 0.00 | 0.32 | 0.11 | 0.04 | 0.04 | 0.09 | 0.00 | 0.00 | 0.11 |
| | Fear | 0.14 | 0.33 | 0.33 | 0.60 | 0.66 | 0.04 | 0.64 | 0.22 | 0.14 | 0.26 | 0.57 | 0.28 | **0.67** | 0.66 | 0.11 |
| | Sad | 0.16 | 0.26 | 0.34 | 0.39 | 0.19 | 0.26 | **0.49** | 0.47 | 0.20 | 0.29 | 0.37 | 0.05 | 0.44 | 0.42 | 0.10 |
| | Disgust | 0.27 | 0.70 | 0.50 | 0.74 | 0.61 | 0.26 | 0.73 | 0.25 | 0.15 | 0.55 | 0.75 | 0.72 | 0.75 | **0.77** | 0.10 |
| | Anger | 0.00 | 0.00 | 0.00 | 0.15 | 0.00 | 0.08 | 0.27 | 0.17 | 0.07 | 0.00 | 0.18 | 0.00 | **0.34** | 0.24 | 0.06 |
| | **Mean** | 0.18 | 0.25 | 0.25 | 0.33 | 0.26 | 0.17 | 0.38 | 0.12 | 0.16 | 0.21 | 0.33 | 0.22 | **0.40** | 0.37 | 0.11 |

⋈ = fusion of modalities, Pup. = Pupil size, Int. = Pixel Intensity, F.f. = Fisherface features, $\mu$-E. = micro-expressions.

Table 9: **Standard deviation of discrete emotion prediction results.**

| | | Wearable devices | | | | Egocentric glasses (ET video) | | | | | | | | All | Baseline |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Session | Domain | ECG | EDA | RSP | ⋈ | Pup. | Int. | F.f. | Gaze | Blink | $\mu$-E. | PPG | IMU | ⋈ | Random |
| | Amused | 0.16 | 0.46 | 0.40 | 0.45 | 0.44 | 0.32 | 0.46 | 0.44 | 0.25 | 0.25 | 0.44 | 0.45 | 0.46 | 0.47 | |
| | Content | 0.26 | 0.23 | 0.24 | 0.31 | 0.32 | 0.25 | 0.35 | 0.24 | 0.15 | 0.20 | 0.39 | 0.32 | 0.34 | 0.35 | |
| | Excited | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.00 | 0.28 | 0.00 | 0.11 | 0.00 | 0.16 | 0.00 | 0.28 | 0.28 | |
| | Awe | 0.16 | 0.00 | 0.10 | 0.00 | 0.41 | 0.10 | 0.34 | 0.00 | 0.06 | 0.11 | 0.00 | 0.16 | 0.36 | 0.42 | |
| **A** | Neutral | 0.26 | 0.32 | 0.25 | 0.26 | 0.28 | 0.23 | 0.33 | 0.32 | 0.26 | 0.28 | 0.32 | 0.29 | 0.32 | 0.33 | |
| | Fear | 0.00 | 0.28 | 0.00 | 0.16 | 0.43 | 0.16 | 0.47 | 0.22 | 0.00 | 0.00 | 0.47 | 0.22 | 0.47 | 0.46 | |
| | Sad | 0.32 | 0.42 | 0.33 | 0.38 | 0.45 | 0.19 | 0.40 | 0.47 | 0.17 | 0.28 | 0.36 | 0.44 | 0.38 | 0.38 | |
| | Disgust | 0.16 | 0.32 | 0.30 | 0.21 | 0.29 | 0.31 | 0.45 | 0.25 | 0.21 | 0.28 | 0.47 | 0.38 | 0.44 | 0.44 | |
| | Anger | 0.24 | 0.00 | 0.24 | 0.30 | 0.38 | 0.19 | 0.48 | 0.17 | 0.25 | 0.16 | 0.28 | 0.24 | 0.46 | 0.46 | |
| | **Mean** | 0.17 | 0.23 | 0.21 | 0.23 | 0.34 | 0.19 | 0.40 | 0.11 | 0.08 | 0.11 | 0.32 | 0.28 | 0.39 | 0.40 | |
| | Amused | 0.25 | 0.28 | 0.29 | 0.28 | 0.25 | 0.27 | 0.28 | 0.26 | 0.28 | 0.28 | 0.25 | 0.22 | 0.31 | 0.30 | |
| | Content | 0.39 | 0.32 | 0.40 | 0.44 | 0.29 | 0.36 | 0.43 | 0.23 | 0.31 | 0.34 | 0.44 | 0.37 | 0.41 | 0.42 | |
| | Excited | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.16 | 0.00 | 0.16 | 0.00 | 0.00 | 0.00 | 0.22 | 0.16 | |
| | Awe | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| **B** | Neutral | 0.00 | 0.31 | 0.18 | 0.10 | 0.11 | 0.21 | 0.00 | 0.00 | 0.16 | 0.11 | 0.08 | 0.13 | 0.00 | 0.00 | |
| | Fear | 0.30 | 0.39 | 0.36 | 0.49 | 0.49 | 0.08 | 0.50 | 0.46 | 0.28 | 0.30 | 0.48 | 0.36 | 0.49 | 0.49 | |
| | Sad | 0.28 | 0.33 | 0.41 | 0.42 | 0.26 | 0.33 | 0.46 | 0.34 | 0.32 | 0.37 | 0.41 | 0.10 | 0.43 | 0.43 | |
| | Disgust | 0.27 | 0.51 | 0.45 | 0.50 | 0.50 | 0.36 | 0.50 | 0.50 | 0.28 | 0.48 | 0.50 | 0.50 | 0.50 | 0.49 | |
| | Anger | 0.00 | 0.00 | 0.00 | 0.22 | 0.00 | 0.16 | 0.28 | 0.16 | 0.16 | 0.00 | 0.24 | 0.00 | 0.31 | 0.28 | |
| | **Mean** | 0.17 | 0.24 | 0.23 | 0.27 | 0.21 | 0.20 | 0.29 | 0.16 | 0.18 | 0.21 | 0.27 | 0.19 | 0.30 | 0.29 | |
| | Amused | 0.22 | 0.23 | 0.22 | 0.22 | 0.22 | 0.18 | 0.21 | 0.22 | 0.19 | 0.32 | 0.18 | 0.23 | 0.21 | 0.22 | |
| | Content | 0.23 | 0.21 | 0.26 | 0.24 | 0.26 | 0.23 | 0.30 | 0.22 | 0.24 | 0.20 | 0.28 | 0.22 | 0.24 | 0.24 | |
| | Excited | 0.00 | 0.10 | 0.00 | 0.00 | 0.19 | 0.00 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.20 | 0.18 | |
| | Awe | 0.10 | 0.00 | 0.00 | 0.00 | 0.32 | 0.00 | 0.34 | 0.16 | 0.08 | 0.00 | 0.00 | 0.00 | 0.43 | 0.40 | |
| **A+B** | Neutral | 0.20 | 0.25 | 0.21 | 0.17 | 0.24 | 0.19 | 0.28 | 0.26 | 0.21 | 0.17 | 0.24 | 0.24 | 0.29 | 0.28 | |
| | Fear | 0.18 | 0.24 | 0.26 | 0.38 | 0.39 | 0.25 | 0.38 | 0.36 | 0.13 | 0.20 | 0.41 | 0.16 | 0.38 | 0.40 | |
| | Sad | 0.30 | 0.35 | 0.27 | 0.35 | 0.34 | 0.21 | 0.35 | 0.31 | 0.17 | 0.12 | 0.38 | 0.33 | 0.32 | 0.34 | |
| | Disgust | 0.16 | 0.28 | 0.27 | 0.32 | 0.33 | 0.25 | 0.35 | 0.29 | 0.19 | 0.20 | 0.36 | 0.34 | 0.34 | 0.32 | |
| | Anger | 0.00 | 0.18 | 0.22 | 0.19 | 0.30 | 0.00 | 0.42 | 0.21 | 0.19 | 0.03 | 0.31 | 0.27 | 0.44 | 0.40 | |
| | **Mean** | 0.15 | 0.20 | 0.19 | 0.21 | 0.29 | 0.15 | 0.31 | 0.08 | 0.05 | 0.14 | 0.24 | 0.20 | 0.32 | 0.31 | |

⋈ = fusion of modalities, Pup. = Pupil size, Int. = Pixel Intensity, F.f. = Fisherface features, $\mu$-E. = micro-expressions.

### C.4 Personality Prediction

Table 10 presents the personality trait predictions for session A and session B. The pupil size and blink rate achieved the highest $F_1$ score in session A, while ECG performed best in session B ($F_1 = 0.60$). Table 11 presents the standard deviations of the personality prediction results.

Table 10: **Personality prediction results.**

| | | **Wearable devices** | | | | **Egocentric glasses** | | | | | | | | | **All** | **Baseline** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ET video | | | | | | | | | | |
| Session | Domain | ECG | EDA | RSP | $\bowtie$ | Pup. | Int. | F.f. | Gaze | Blink | $\mu$-E. | PPG | IMU | $\bowtie$ | $\bowtie$ | Random |
| | Ex | 0.48 | 0.48 | 0.42 | 0.30 | 0.48 | 0.48 | 0.45 | 0.48 | **0.58** | 0.38 | 0.45 | 0.48 | 0.38 | 0.25 | **0.55** |
| | Ag | 0.45 | 0.42 | 0.48 | 0.38 | 0.42 | 0.32 | 0.22 | 0.40 | **0.58** | 0.45 | 0.57 | 0.50 | 0.48 | 0.52 | 0.52 |
| **A** | Co | 0.42 | 0.52 | 0.28 | 0.42 | **0.65** | 0.48 | 0.52 | 0.58 | 0.63 | 0.63 | 0.52 | 0.40 | 0.35 | 0.38 | 0.55 |
| | NE | 0.50 | 0.52 | 0.50 | 0.52 | **0.68** | 0.45 | 0.30 | 0.58 | 0.45 | 0.53 | 0.50 | 0.57 | 0.62 | 0.48 | 0.52 |
| | OM | 0.30 | 0.60 | **0.62** | 0.48 | 0.52 | 0.55 | 0.42 | 0.60 | 0.53 | 0.45 | 0.28 | 0.60 | 0.60 | 0.45 | 0.52 |
| | **Mean** | 0.43 | 0.51 | 0.46 | 0.42 | **0.55** | 0.46 | 0.38 | 0.53 | **0.55** | 0.49 | 0.46 | 0.51 | 0.49 | 0.42 | 0.53 |
| | Ex | 0.45 | 0.50 | 0.48 | 0.55 | 0.45 | **0.75** | 0.53 | 0.45 | 0.73 | 0.52 | 0.55 | **0.75** | 0.48 | 0.55 | |
| | Ag | 0.48 | 0.60 | 0.48 | 0.48 | 0.48 | 0.60 | 0.45 | **0.70** | 0.45 | 0.63 | 0.38 | 0.32 | 0.65 | 0.35 | 0.52 |
| **B** | Co | 0.68 | 0.40 | 0.35 | 0.62 | 0.45 | 0.28 | 0.40 | **0.70** | 0.40 | 0.45 | 0.62 | 0.50 | 0.45 | 0.62 | 0.55 |
| | NE | **0.78** | 0.52 | 0.65 | 0.70 | 0.60 | 0.52 | 0.42 | 0.53 | 0.43 | 0.73 | 0.48 | 0.65 | 0.40 | 0.72 | 0.52 |
| | OM | **0.62** | 0.52 | 0.57 | 0.35 | 0.48 | 0.50 | 0.40 | 0.48 | 0.53 | 0.43 | 0.52 | 0.40 | 0.35 | 0.28 | 0.52 |
| | **Mean** | **0.60** | 0.51 | 0.51 | 0.54 | 0.49 | 0.53 | 0.44 | 0.59 | 0.45 | 0.59 | 0.50 | 0.48 | 0.52 | 0.49 | 0.53 |

$\bowtie$ = fusion of modalities, Pup. = Pupil size, Int. = Pixel Intensity, F.f. = Fisherface features, $\mu$-E. = micro-expressions.

Table 11: **Standard deviation of personality prediction results.**

| | | **Wearable devices** | | | | **Egocentric glasses** | | | | | | | | | **All** | **Baseline** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ET video | | | | | | | | | | |
| Session | Domain | ECG | EDA | RSP | $\bowtie$ | Pup. | Int. | F.f. | Gaze | Blink | $\mu$-E. | PPG | IMU | $\bowtie$ | $\bowtie$ | Random |
| | Ex | 0.50 | 0.50 | 0.49 | 0.48 | 0.50 | 0.50 | 0.50 | 0.50 | 0.49 | 0.48 | 0.50 | 0.50 | 0.48 | 0.45 | |
| | Ag | 0.50 | 0.49 | 0.50 | 0.50 | 0.49 | 0.47 | 0.42 | 0.46 | 0.49 | 0.50 | 0.49 | 0.50 | 0.50 | 0.50 | |
| **A** | Co | 0.49 | 0.50 | 0.45 | 0.50 | 0.48 | 0.50 | 0.50 | 0.46 | 0.48 | 0.48 | 0.50 | 0.49 | 0.48 | 0.48 | |
| | NE | 0.50 | 0.50 | 0.50 | 0.50 | 0.47 | 0.50 | 0.46 | 0.50 | 0.50 | 0.50 | 0.50 | 0.49 | 0.48 | 0.50 | |
| | OM | 0.46 | 0.49 | 0.48 | 0.50 | 0.50 | 0.50 | 0.49 | 0.50 | 0.50 | 0.50 | 0.45 | 0.49 | 0.49 | 0.50 | |
| | **Mean** | 0.49 | 0.50 | 0.48 | 0.50 | 0.49 | 0.50 | 0.47 | 0.48 | 0.49 | 0.49 | 0.49 | 0.49 | 0.49 | 0.49 | |
| | Ex | 0.49 | 0.50 | 0.50 | 0.50 | 0.50 | 0.43 | 0.50 | 0.49 | 0.50 | 0.45 | 0.50 | 0.50 | 0.43 | 0.50 | |
| | Ag | 0.50 | 0.49 | 0.50 | 0.50 | 0.50 | 0.49 | 0.50 | 0.49 | 0.50 | 0.48 | 0.48 | 0.47 | 0.48 | 0.47 | |
| **B** | Co | 0.48 | 0.49 | 0.48 | 0.48 | 0.50 | 0.45 | 0.49 | 0.50 | 0.49 | 0.50 | 0.48 | 0.50 | 0.50 | 0.48 | |
| | NE | 0.47 | 0.50 | 0.48 | 0.46 | 0.49 | 0.50 | 0.49 | 0.49 | 0.49 | 0.45 | 0.50 | 0.48 | 0.49 | 0.47 | |
| | OM | 0.49 | 0.50 | 0.49 | 0.48 | 0.50 | 0.50 | 0.49 | 0.50 | 0.50 | 0.49 | 0.50 | 0.49 | 0.48 | 0.45 | |
| | **Mean** | 0.49 | 0.50 | 0.49 | 0.48 | 0.50 | 0.47 | 0.49 | 0.50 | 0.50 | 0.47 | 0.49 | 0.49 | 0.48 | 0.47 | |
| | Ex | 0.43 | 0.50 | 0.47 | 0.40 | 0.49 | 0.46 | 0.50 | 0.49 | 0.49 | 0.50 | 0.49 | 0.50 | 0.50 | 0.50 | |
| | Ag | 0.48 | 0.49 | 0.50 | 0.49 | 0.50 | 0.49 | 0.49 | 0.49 | 0.48 | 0.49 | 0.49 | 0.49 | 0.46 | 0.49 | |
| **A+B** | Co | 0.49 | 0.50 | 0.46 | 0.50 | 0.50 | 0.49 | 0.49 | 0.50 | 0.49 | 0.50 | 0.48 | 0.50 | 0.50 | 0.48 | |
| | NE | 0.50 | 0.50 | 0.48 | 0.47 | 0.47 | 0.49 | 0.46 | 0.49 | 0.50 | 0.49 | 0.49 | 0.50 | 0.48 | 0.45 | |
| | OM | 0.48 | 0.50 | 0.50 | 0.49 | 0.50 | 0.49 | 0.49 | 0.50 | 0.48 | 0.47 | 0.46 | 0.48 | 0.45 | 0.48 | |
| | **Mean** | 0.48 | 0.50 | 0.48 | 0.47 | 0.49 | 0.48 | 0.49 | 0.50 | 0.49 | 0.49 | 0.48 | 0.49 | 0.48 | 0.48 | |

$\bowtie$ = fusion of modalities, Pup. = Pupil size, Int. = Pixel Intensity, F.f. = Fisherface features, $\mu$-E. = micro-expressions.

Table 12: **Detailed description of the emotion-inducing video clips.**

| **ID** | **Video Label** | **Target Emotion** | **Description** | **Duration (s)** |
|---|---|---|---|---|
| 1 | AnimalCruelty | Anger | Televised news of a dog groomer abusing dogs. | 40 |
| 2 | AuroraBorealis | Awe | A timelapse of the northern lights. | 40 |
| 3 | BearGrylls | Disgust | A man eats a worm. | 40 |
| 4 | CollegeAcceptance | Excitement | A student gets accepted to his dream college. | 40 |
| 5 | HarrySally | Amusement | Sally shows Harry how women fake orgasms at a restaurant. | 72 |
| 6 | JojoRabbit | Sadness | A boy embraces his mother who has been hanged. | 46 |
| 7 | LoveActually | Content | Narrator purporting that "love is everywhere". | 42 |
| 8 | MovingShapes | Neutral | Shapes moving on a neutral background. | 40 |
| 9 | Psycho | Fear | A lady gets murdered in her bathtub by an intruder. | 45 |