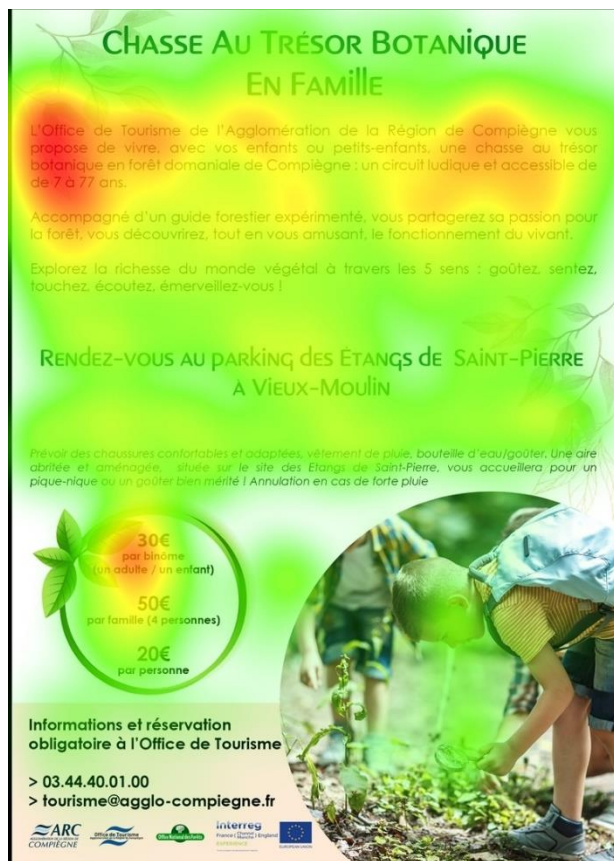


Digital laboratory (T4.2.3)

5 of our communication tools were tested during the digital laboratory run by the University of Surrey: flyers for the terrarium workshop, the botanical treasure hunt, the imperial guided tour, the promotional video for the imperial guided tour and the flyer for the yoga sessions in the cloister. Feedback from UOS (PP9) and its recommendations helped us to understand which elements to focus on in order to build and perfect our communication tools and better interpret visitors' emotions when they first read the materials. The overall result of this analysis is that communication materials arouse emotions, but it is difficult to convert them into an act of purchase. This also means that certain factors, in addition to the marketing mix communication, need to be rethought: price, product or distribution.

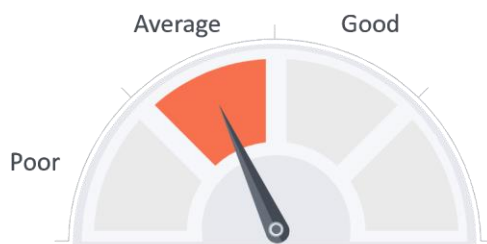


Heat map (spectator view)

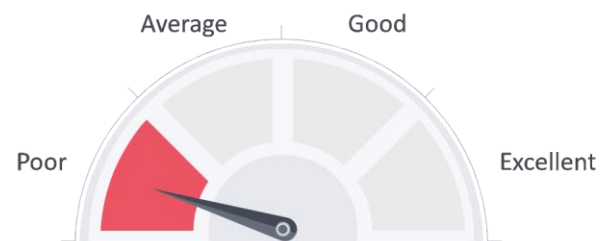
Annexes

T4.2.3 : digital Lab's relationship with the University of Surrey

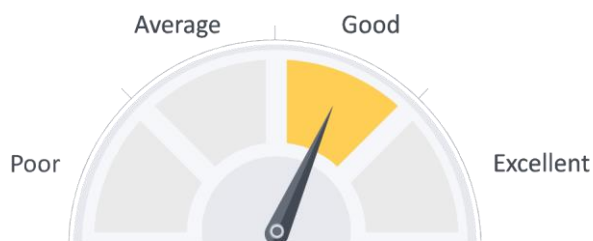
Digital Lab Testing - ARC - Atelier terrarium



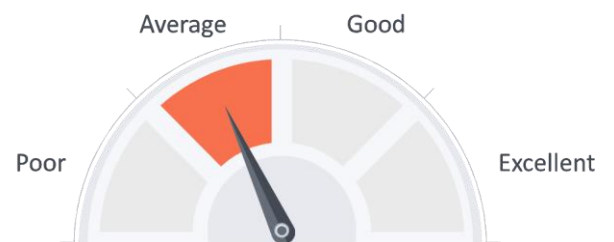
Ad perception



Intention to purchase



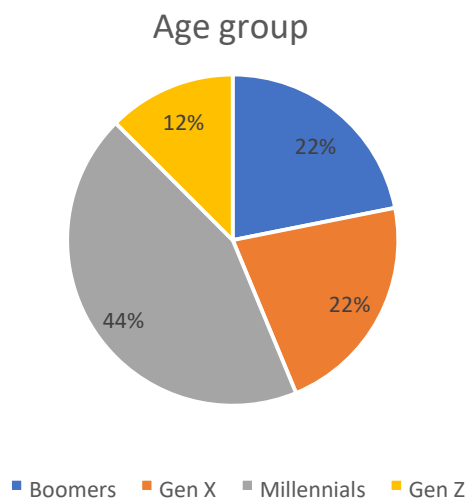
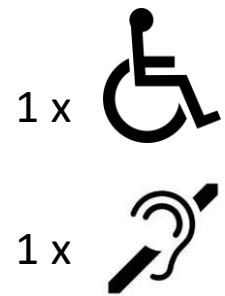
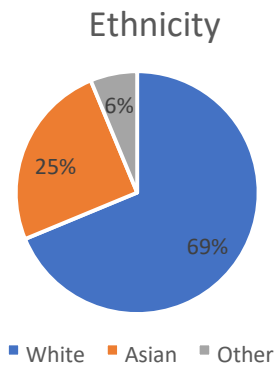
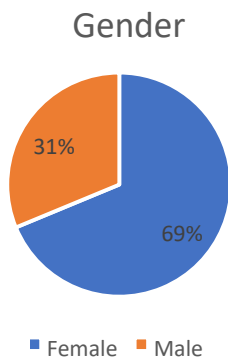
Visual attention



Emotional response

Participant demographics

Marketing tests were conducted with 32 participants. All the participants tested the English content and 14 tested the French content. Participants ranged from 18 to 78 years old and the majority were female with a white ethnic background.



	Born	Ages
Gen Z	1997 – 2012	10 – 25
Millennials	1981 – 1996	26 – 41
Gen X	1965 – 1980	42 – 57
Boomers II	1955 – 1964	58 – 67
Boomers I	1946 – 1954	68 – 76
Post War	1928 – 1945	77 – 94

Source: www.beresfordresearch.com

Experiment settings

Number of participants: **15**

Instructions:

“You will be now presented flyers in French.
Let us know how you liked the content afterwards.
Thanks!”



Exposure time: **30 seconds**

Surveys after exposure:

- Ad perception
- Intention to purchase

Eye-tracking - An explanation of visual attention

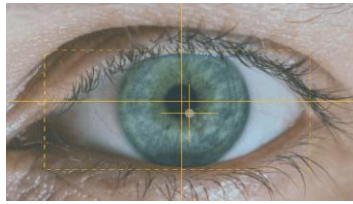
Eye tracking measures viewers' eye movements to understand the distribution of visual attention.

Quantification:

The process involves the camera tracking the pupil center and where the light reflects from the cornea, informing the eye tracker about the movement and direction of the eye.

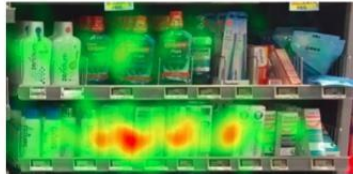
Eye tracking is quantified in various different ways:

- **Gaze points** constitute the most basic unit of measure. One gaze point equals one raw sample captured by the eye tracker.
- Eye movements between fixations are known as **saccades**.
- A **fixation**, a period in which our eyes are locked toward a specific object. Typically, the fixation duration is 100-300 milliseconds.



Data Visualizations:

- **Heatmaps** are static or dynamic aggregations of gaze points or fixations



Low Attention  High Attention

revealing the distribution of visual attention. - **Visual attention** is aggregated across the entire audience, and displayed as “heat” overlaid on a stimulus. This heat can help identify what areas of the content draw the most visual attention, and what areas or elements may go missed entirely.

While **red areas** suggest a high number of gaze points, and therefore an increased level of interest, **yellow and green areas** show fewer gaze points, indicating a less engaged visual system.

- **Areas of Interest (AOIs)** are user-defined subregions of a displayed stimulus. AOIs are an essential tool to incorporate into analysis for quantification and a more objective approach to interpreting eye tracking data. These metrics can **reveal how many respondents fixated in that area of interest, how long it took them to fixate** in that area, and **how long they spent looking**. These metrics can indicate if a stimulus is capturing visual attention in the intended way, or if the stimulus can be optimized to better appeal to natural visual patterns.



Areas of Interest



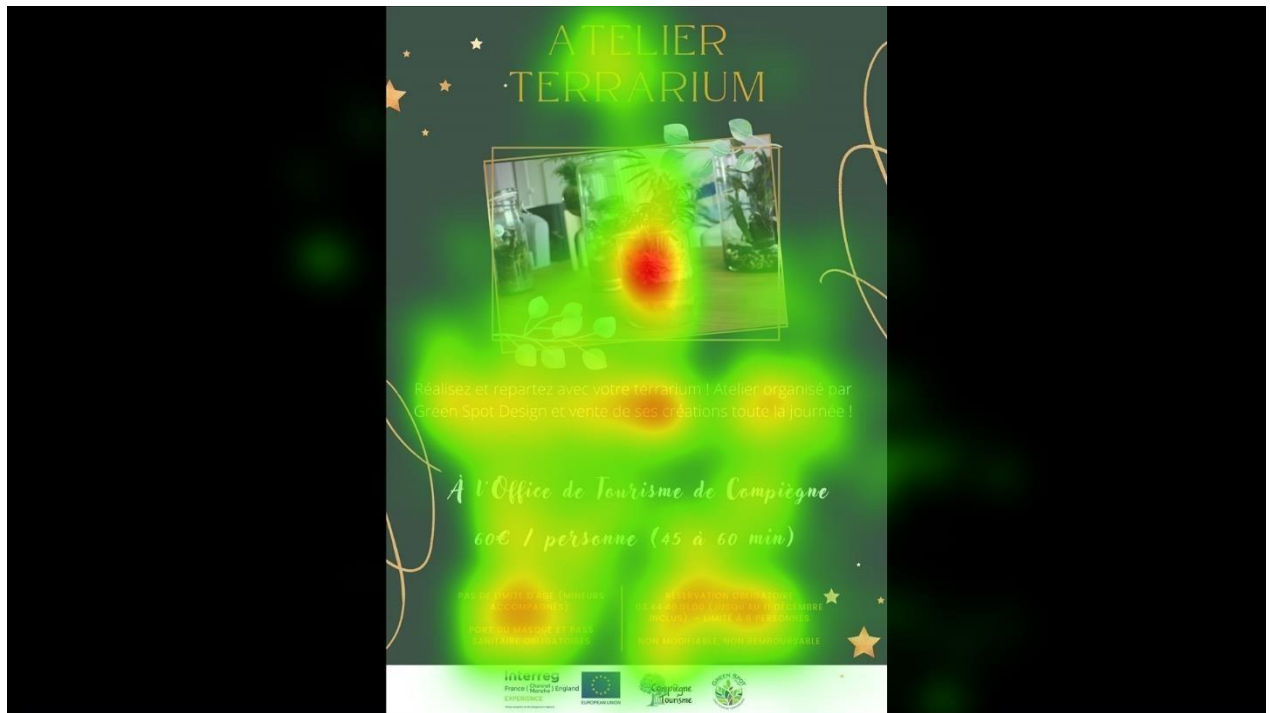
Looking Time: **2 sec**
Time to Notice: **1.1 sec**
% to Notice: **85%**

Looking Time: **4 sec**
Time to Notice: **2.3 sec**
% To Notice: **95%**

While eye tracking provides a wealth of information on where and when an individual looked, lengths of fixations, and the order in which elements are fixated upon, eye tracking does **not** reveal *why* an individual looked at a certain element, or *how they felt* while navigating a certain visual scene.

Eye-tracking - Results

Heatmap



Stimulus: Flyer_Atelier et vente de terrarium | Exposure time: 30s

Eye-tracking - Results

Areas Interest

of



AOI metrics ...	Title	Photo	Price - time
Information			
Size (cm2)	47.9	134.9	27.7
Size (%)	3	8.5	1.7
Respondent base	15	15	15
Gaze based metrics			
Respondent count	14	15	14
Respondent ratio (%)	93.3	100	93.3
Dwell count	2.5	9.1	5
Revisit count	1.5	8.1	4
Hit time AOI (ms)	3314.8	479.4	8673.5
Dwell time (ms)	1466.8	6011.4	2225.7
Dwell time (%)	4.9	20	7.4
First dwell duration (ms)	919.7	646.1	757.2
Fixation based metrics			
Revisit count	1.4	6.6	1.9
Fixation count	5.9	23.1	11.1
TTFF AOI (ms)	3339.2	586.8	8979.4
Dwell time (ms)	1259.5	4947.4	2042.5
Dwell time (%)	4.2	16.5	6.8
Fixation duration (ms)	204.8	230	183.4
First fixation duration (ms)	188.1	231.8	150.6

Gaze based metrics analyse searching behaviour

Dwell count = how often participants looked at this AOI in average / revisit = how often they revisit this AOI

Hit time AOI (ms) = how long before people look at this AOI in average

Dwell time (ms) = how long people spent on this AOI in average / how long in (%)

Fixation based metrics analyse information processing

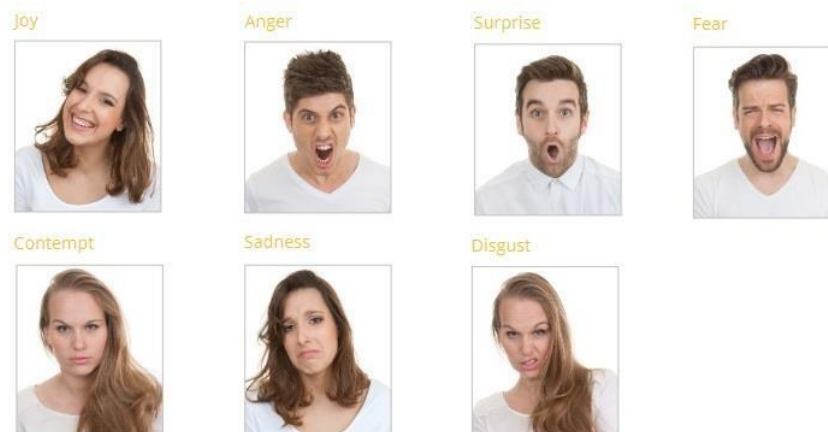
Fixation count = how often participants process information in this AOI in average

TTFF AOI (ms) = time to first fixation – how long before people process information in this AOI in average

Facial Expression Analysis - An explanation of expressed emotions

Facial expression analysis (FEA) measures movements of facial muscles to capture expressed emotions like joy, sadness, disgust, and overall valence in response to stimuli.

iMotions generates the following 7 emotions, created using Friesen & Ekman's EMFACS mappings. (Friesen, W. V., & Ekman, P. (1984). EMFACS7. Unpublished manuscript. Human Interaction Laboratory)



In addition to the expressions and emotions above, Affectiva AFFDEX computes Valence, Engagement, and Attention.

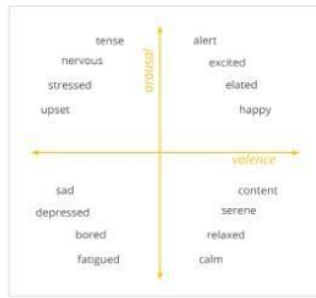
- **Valence** (-100 - 100): **A measure of how positive or negative the expression is.**

Factors that increase the likelihood of positive valence include: Smile, Cheek Raise.

Factors that increase the likelihood of negative valence include: Inner Brow Raise, Brow Furrow, Nose Wrinkle, Upper Lip Raise, Lip Corner Depressor, Chin Raise, Lip Press, Lip Suck.

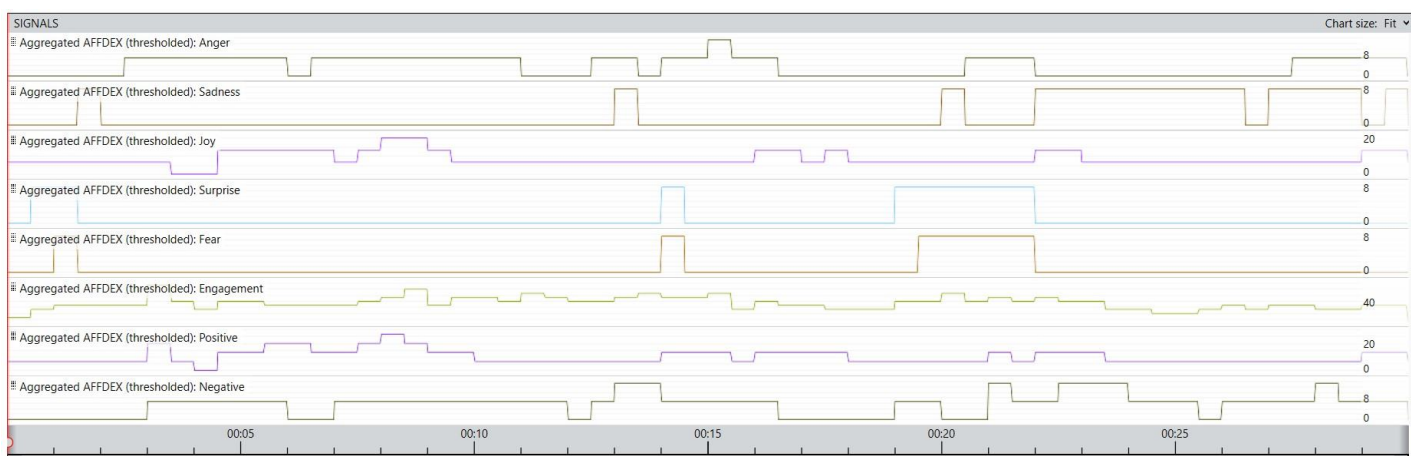
- **Engagement** (0 - 100): **A measure of emotional responsiveness triggered by the content, whether positive or negative.**

Calculated as the mean of the highest evidence scores from the upper (Brow raise, Brow furrow, Nose wrinkle) and lower face region (Lip corner depressor, Chin raise, Lip pucker, Lip press, Mouth open, Lip suck, Smile), respectively. - **Attention** (0-100): **A measure of point of focus of the user based on the head position.**



Facial expressions provide information on what is *expressed*. One of the core limitations of facial expression analysis is its inability to assess someone's *emotional arousal*, that is, the intensity of an emotion.

Facial Expression Analysis - Results



Threshold was set to 50% likelihood representing a moderately strong display of facial response

Good emotional response for a flyer

Joy: At the highest 20% of participants felt joy **Anger, sadness:** Peaks for 13% participants **Surprise and fear:** Peaks for 6% participants **Engagement** was set between 20 and 60% of participants **Positive emotions** felt by 26% of participants at the peak **Negative emotions** felt by 13% of participants

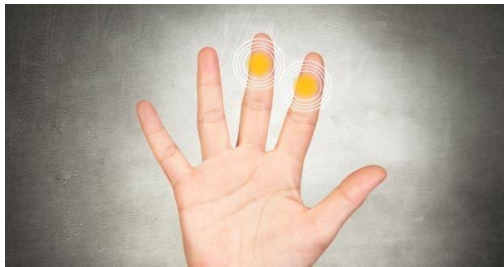
Galvanic Skin Response - An explanation of emotional arousal

Galvanic Skin Response (GSR) measures emotional arousal via levels of perspiration on the surface of the skin, indicating the intensity of emotional response to stimuli.

Quantification:

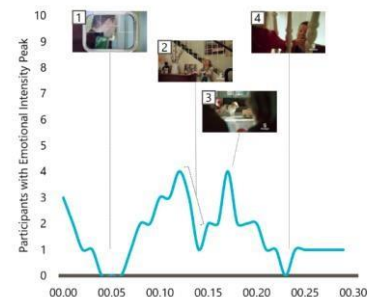
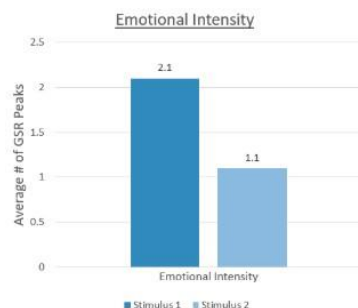
When sweat glands are triggered, they secrete moisture through pores towards the skin surface. By changing the balance of positive and negative ions in the secreted fluid, electrical current flows more readily, resulting in measurable changes in skin conductance. Skin conductivity is controlled on an entirely **subconscious level**.

- A **GSR peak** is a biological indicator that something relevant happened at that moment – an emotional connection was made. GSR peaks per minute indicates, on average, how many emotional events occurred every 60 seconds. The higher the number, the more of an emotional response the viewers were having during the content or experience.



Data Visualizations:

- **Overall scores** can be compared between two stimuli
- **Emotional intensity** can be measured on a moment to moment basis to better understand the participants' emotional journey while being exposed to video media content

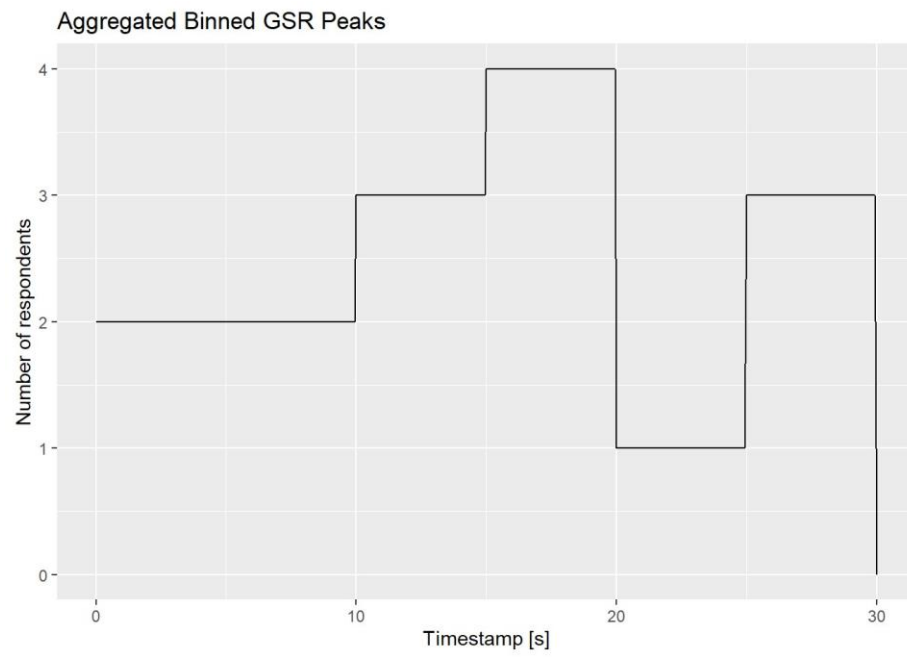


It is important to note that while GSR can measure if there is an emotional response and the intensity of an emotional response, it does **not** measure the valence, i.e. whether that emotional response is positive or negative.

Galvanic Skin Response - Results

Methods

GSR aggregation is accomplished based on binarization of the signal. iMotions can count the number of respondents that had "a response" (at least one GSR peak) in a time window: 5000 [ms]. The aggregated result therefore relates directly to the audience and the time window, e.g., 10 out of 29 respondents had a response in the time interval 02:00 - 02:09.

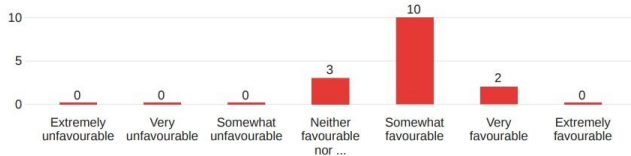


The segment contains 31 respondents. Of these, 15 have GSR data.
During this stimulus, 6 respondents had at least one peak.

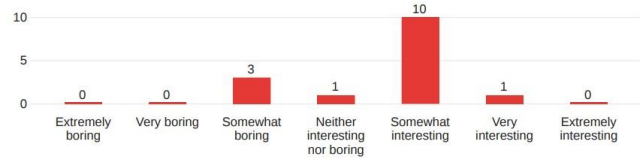
Survey - Results

Ad perception = 4.76/7

Q1 - Aad - Please rate from 1 to 7 your overall reaction to the ad

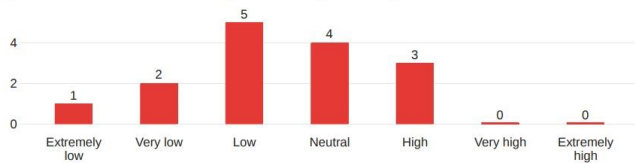


Q2 - Aad - Please rate from 1 to 7 your overall reaction to the ad

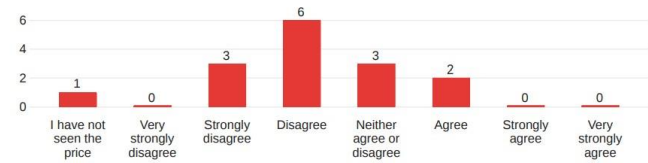


Intention to purchase = 3.42/7

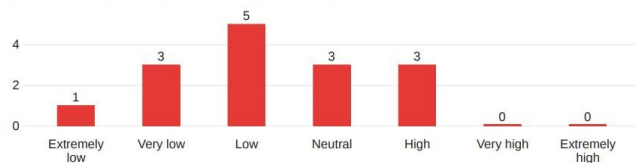
Q3 - IP - The likelihood of purchasing this experience is



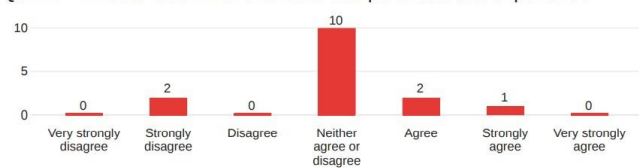
Q4 - IP - At the price shown, I would consider buying the experience



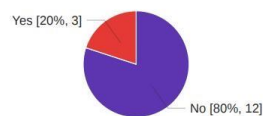
Q5 - IP - My willingness to buy this experience is



Q6 - IP - I would recommend to others to purchase this experience



Q7 - Have you ever done this or a similar experience before?



Recommendations

Good flyer provoking somehow positive emotions (FEA) but with low intensity (GSR).

Consider using bigger characters to show the price.

Consider showing participants creating their own terrarium instead of the finished product.

Bon flyer suscitant des émotions positives mais avec peu d'intensité

Utiliser une police + grosse pour le prix

Utiliser des photos où l'on voit des personnes réalisant leur terrarium à la place du produit fini

Digital Lab Testing - ARC - Chasse aux tresor botanique

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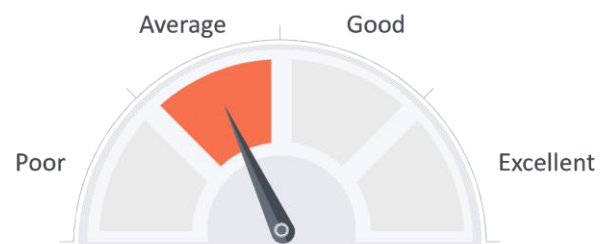
Informations et réservation
obligatoire à l'Office de Tourisme

> 03.44.40.01.00
> tourisme@agglo-compiegne.fr

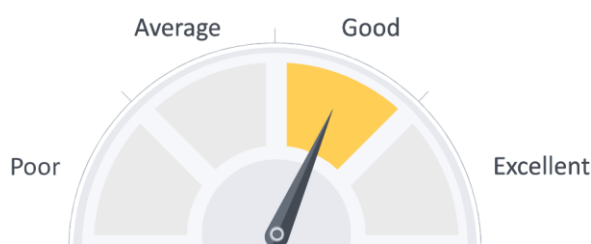
ARC Compiègne, Agglomération de la Région de Compiègne, Interreg France 2014-2020, European Union



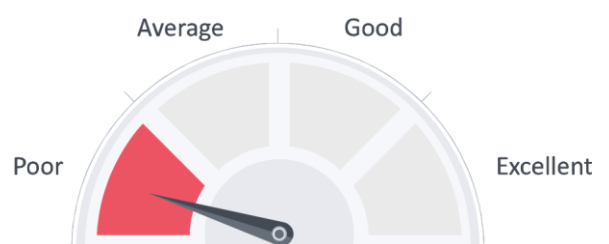

Ad perception



Intention to purchase



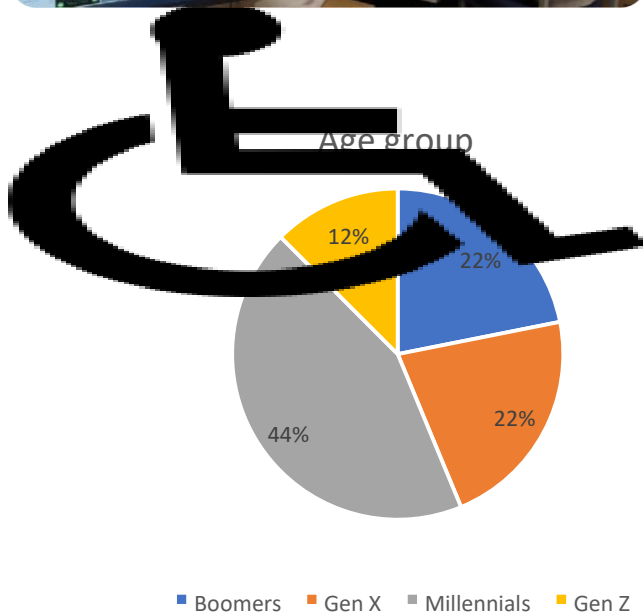
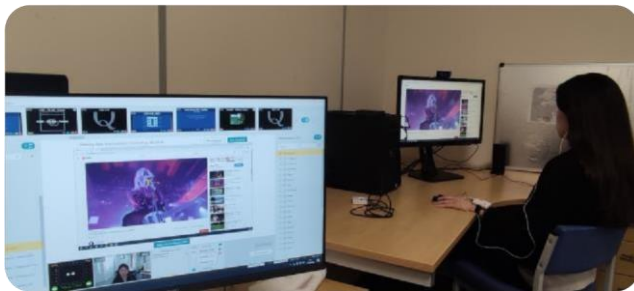
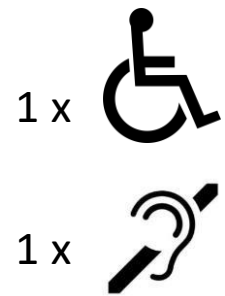
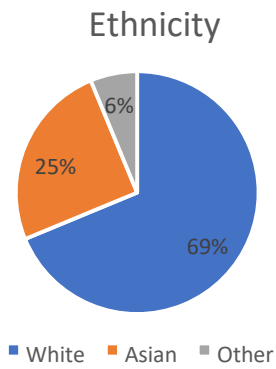
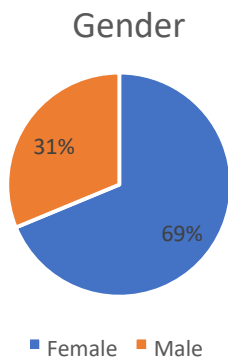
Visual attention



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Experiment settings

Number of participants: **15**
participants

Instructions:

“You will be now presented flyers in French.
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Exposure time: **30 seconds**

Surveys after exposure:

- Ad perception
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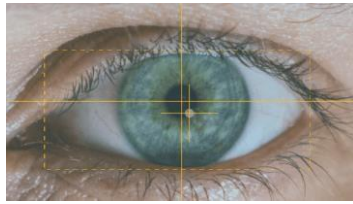
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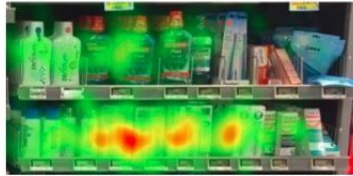
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Low Attention  High Attention

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Areas of Interest



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Time to Notice: **1.1 sec**
% to Notice: **85%**

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Time to Notice: **2.3 sec**
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Eye-tracking - Results

Heatmap

The heatmap is overlaid on a flyer for a family botanical treasure hunt. The color intensity represents eye-tracking density. The top section, containing the title and introductory text, shows high engagement with bright yellow and orange areas. The pricing section, featuring a circular graphic with three price points, also shows significant engagement. The bottom section, including contact information and logos, shows lower engagement with cooler green and blue tones. A photograph of children in a forest is visible on the right side of the flyer.

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Explorez la richesse du monde végétal à travers les 5 sens : goûtez, sentez, touchez, écoutez, émervez-vous !

RENDEZ-VOUS AU PARKING DES ÉTANGS DE SAINT-PIERRE À VIEUX-MOULIN

Prenez des chaussures confortables et adaptez votre tenue à la pluie, bouteille d'eau/gourde, une oie abritée et gilet/cape, situés sur le site des Étangs de Saint-Pierre, vous accueillera pour un pique-nique ou un goûter bien mérité ! Annulation en cas de forte pluie

30€
par binôme
(un adulte / un enfant)

50€
par famille (4 personnes)

20€
par personne

Informations et réservation
obligatoire à l'Office de Tourisme

> 03.44.40.01.00
> tourisme@agglo-compiègne.fr

ARC
COMPIÈGNE

interreg
Pays de la Oise

Logo of the European Union

Stimulus: Flyer_Chasse au trésor botanique | Exposure time: 30s

Eye-tracking - Results

Areas of Interest

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> tourisme@agglo-compiegne.fr

# AOI metrics ...	Title	Price	Photo
Information			
Size (cm2)	55.8	63.1	126.9
Size (%)	3.5	4	8
Respondent base	15	15	15
Gaze based metrics			
Respondent count	14	11	11
Respondent ratio (%)	93.3	73.3	73.3
Dwell count	4.6	3.2	3.1
Revisit count	3.6	2.2	2.1
Hit time AOI (ms)	1059.3	18155.3	10257
Dwell time (ms)	2544.8	2938.7	1643.1
Dwell time (%)	8.5	9.8	5.5
First dwell duration (ms)	666.7	1577.3	470.5
Fixation based metrics			
Respondent count	14	10	9
Respondent ratio (%)	93.3	66.7	60
Revisit count	2.6	1.1	1.3
Fixation count	12.6	10.4	6.1
TTF AOI (ms)	1232.8	19414.7	11453.6
Dwell time (ms)	2634.2	2981.7	1152.8
Dwell time (%)	8.8	9.9	3.8
First fixation duration (ms)	155.7	362.5	169.7

Gaze based metrics analyse searching behaviour

Dwell count = how often participants looked at this AOI in average / revisit = how often they revisit this AOI

Hit time AOI (ms) = how long before people look at this AOI in average

Dwell time (ms) = how long people spent on this AOI in average / how long in (%)

Fixation based metrics analyse information processing

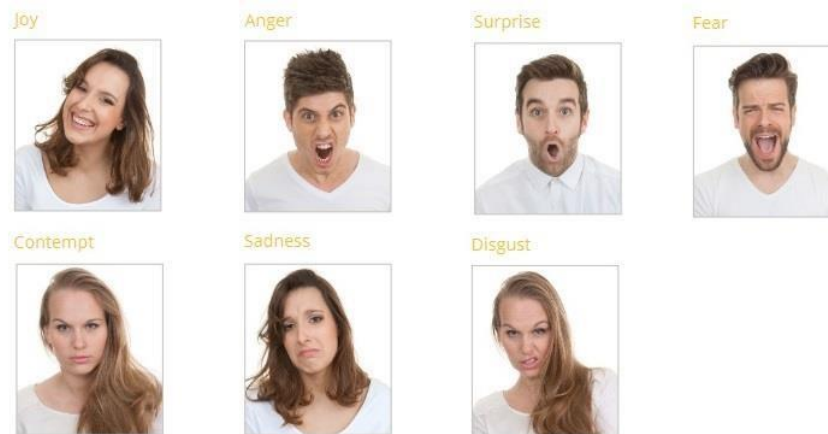
Fixation count = how often participants process information in this AOI in average

TTF AOI (ms) = time to first fixation – how long before people process information in this AOI in average

Facial Expression Analysis - An explanation of expressed emotions

Facial expression analysis (FEA) measures movements of facial muscles to capture expressed emotions like joy, sadness, disgust, and overall valence in response to stimuli.

iMotions generates the following 7 emotions, created using Friesen & Ekman's EMFACS mappings. (Friesen, W. V., & Ekman, P. (1984). EMFACS7. Unpublished manuscript. Human Interaction Laboratory)



In addition to the expressions and emotions above, Affectiva AFFDEX computes Valence, Engagement, and Attention.

- **Valence** (-100 - 100): **A measure of how positive or negative the expression is.**

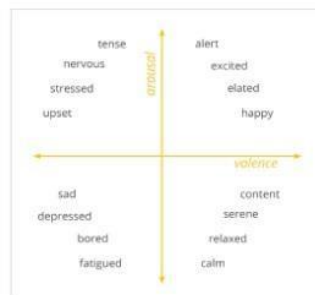
Factors that increase the likelihood of positive valence include: Smile, Cheek Raise.

Factors that increase the likelihood of negative valence include: Inner Brow Raise, Brow Furrow, Nose Wrinkle, Upper Lip Raise, Lip Corner Depressor, Chin Raise, Lip Press, Lip Suck.

- **Engagement** (0 - 100): **A measure of emotional responsiveness triggered by the content, whether positive or negative.**

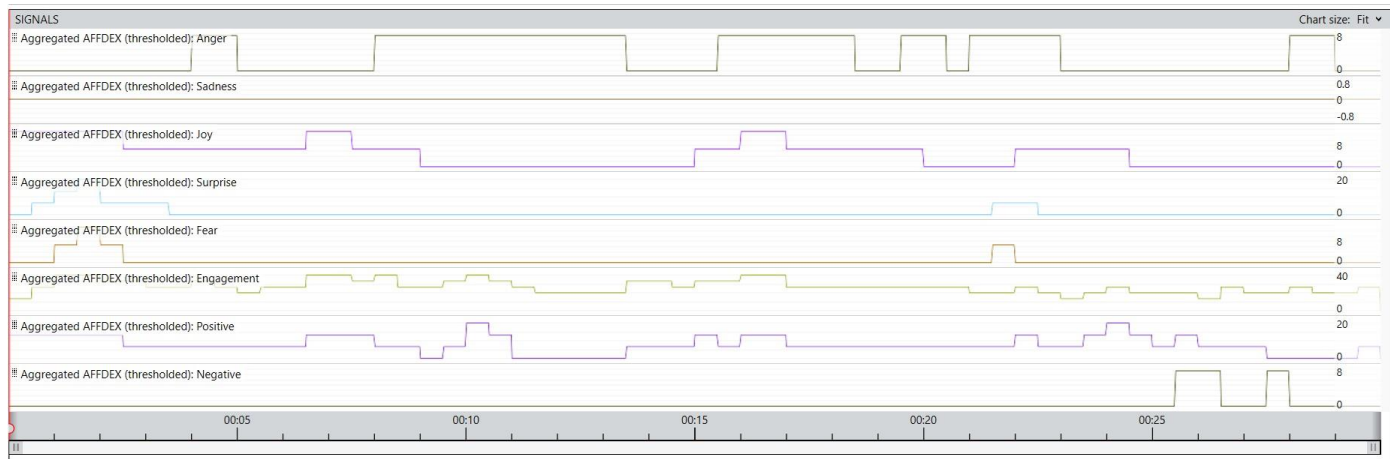
Calculated as the mean of the highest evidence scores from the upper (Brow raise, Brow furrow, Nose wrinkle) and lower face region (Lip corner depressor, Chin raise, Lip pucker, Lip press, Mouth open, Lip suck, Smile), respectively.

- **Attention** (0-100): **A measure of point of focus of the user based on the head position.**



Facial expressions provide information on what is *expressed*. One of the core limitations of facial expression analysis is its inability to assess someone's *emotional arousal*, that is, the intensity of an emotion.

Facial Expression Analysis - Results



Threshold was set to 50% likelihood representing a moderately strong display of facial response

Average emotional response for a flyer

Joy: At the highest 13% of participants felt joy **Anger, sadness:** Peaks for 6% participants **Surprise and fear:** Peaks for 6% participants **Engagement** was set between 13 and 40% of participants **Positive emotions** felt by 20% of participants at the peak **Negative emotions** felt by 6% of participants

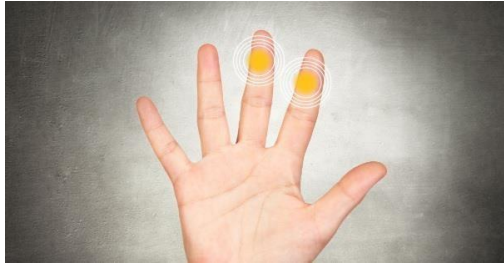
Galvanic Skin Response - An explanation of emotional arousal

Galvanic Skin Response (GSR) measures emotional arousal via levels of perspiration on the surface of the skin, indicating the intensity of emotional response to stimuli.

Quantification:

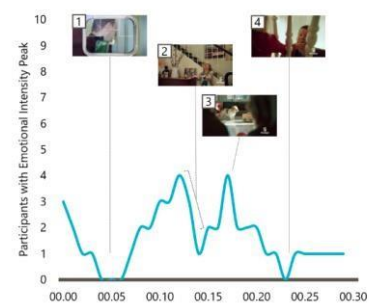
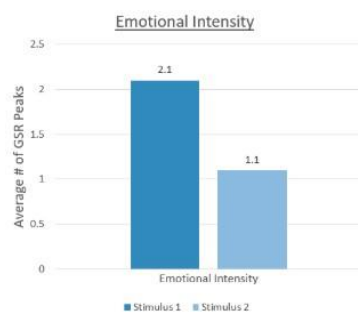
When sweat glands are triggered, they secrete moisture through pores towards the skin surface. By changing the balance of positive and negative ions in the secreted fluid, electrical current flows more readily, resulting in measurable changes in skin conductance. Skin conductivity is controlled on an entirely **subconscious level**.

- A **GSR peak** is a biological indicator that something relevant happened at that moment – an emotional connection was made. GSR peaks per minute indicates, on average, how many emotional events occurred every 60 seconds. The higher the number, the more of an emotional response the viewers were having during the content or experience.



Data Visualizations:

- **Overall scores** can be compared between two stimuli
- **Emotional intensity** can be measured on a moment to moment basis to better understand the participants' emotional journey while being exposed to video media content

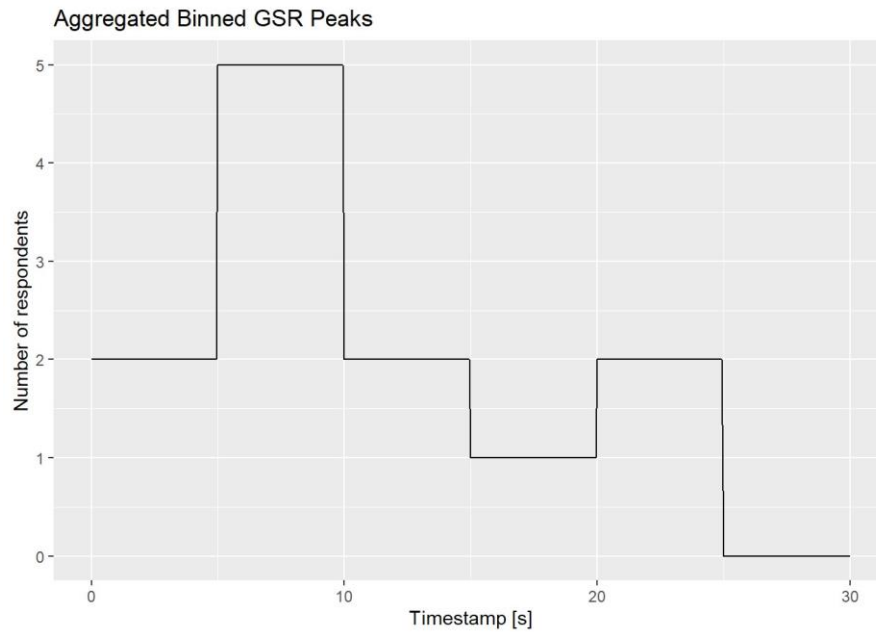


It is important to note that while GSR can measure if there is an emotional response and the intensity of an emotional response, it does **not** measure the valence, i.e. whether that emotional response is positive or negative.

Galvanic Skin Response - Results

Methods

GSR aggregation is accomplished based on binarization of the signal. iMotions can count the number of respondents that had “a response” (at least one GSR peak) in a time window: 5000 [ms]. The aggregated result therefore relates directly to the audience and the time window, e.g., 10 out of 29 respondents had a response in the time interval 02:00 - 02:09.

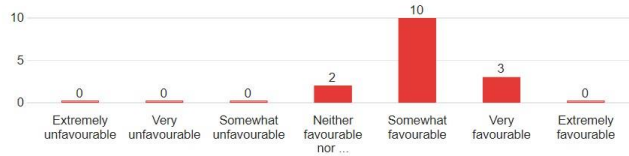


The segment contains 31 respondents. Of these, 15 have GSR data.
During this stimulus, 7 respondents had at least one peak.

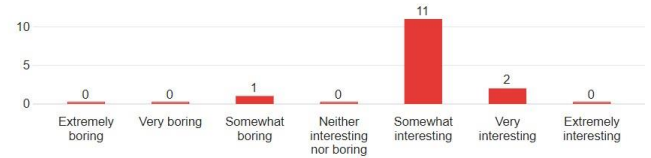
Survey - Results

Ad perception = 5.03/7

Q1 - Aad - Please rate from 1 to 7 your overall reaction to the ad

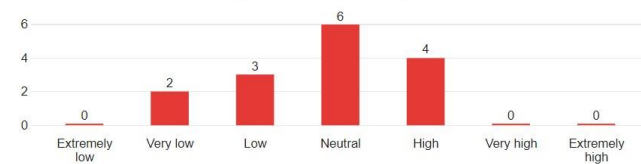


Q2 - Aad - Please rate from 1 to 7 your overall reaction to the ad

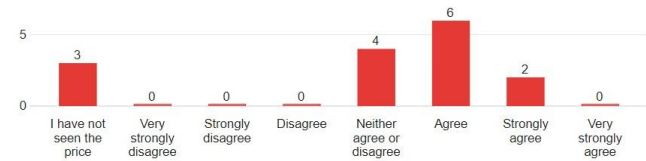


Intention to purchase = 4.12/7

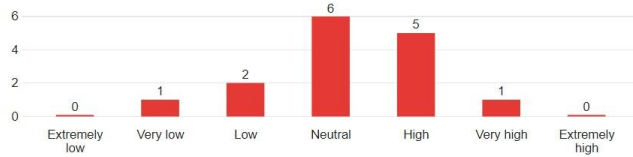
Q3 - IP - The likelihood of purchasing this experience is



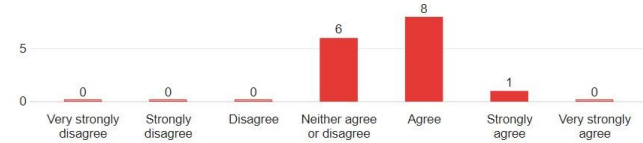
Q4 - IP - At the price shown, I would consider buying the experience



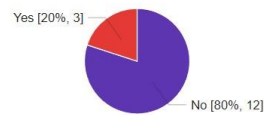
Q5 - IP - My willingness to buy this experience is



Q6 - IP - I would recommend to others to purchase this experience



Q7 - Have you ever done this or a similar experience before?



Recommendations

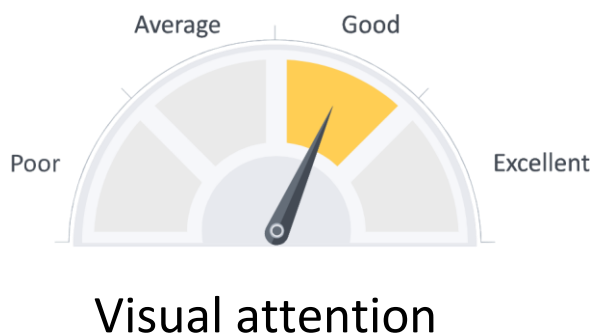
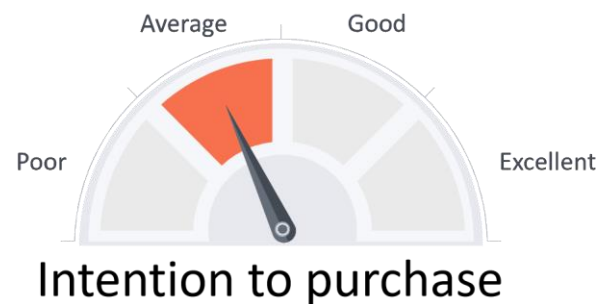
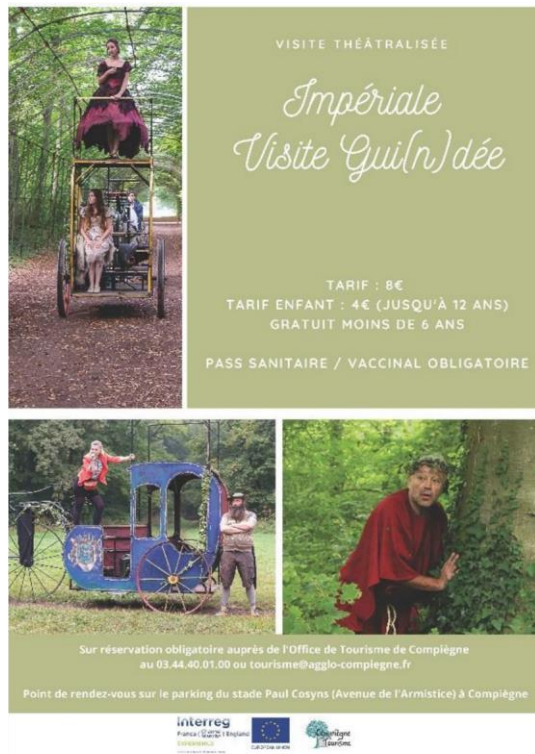
Good flyer provoking low positive emotions (FEA) and with low intensity (GSR).

Maybe a bit too much of text at the beginning.

Bon flyer qui suscite un peu d'émotions positives avec peu d'intensité

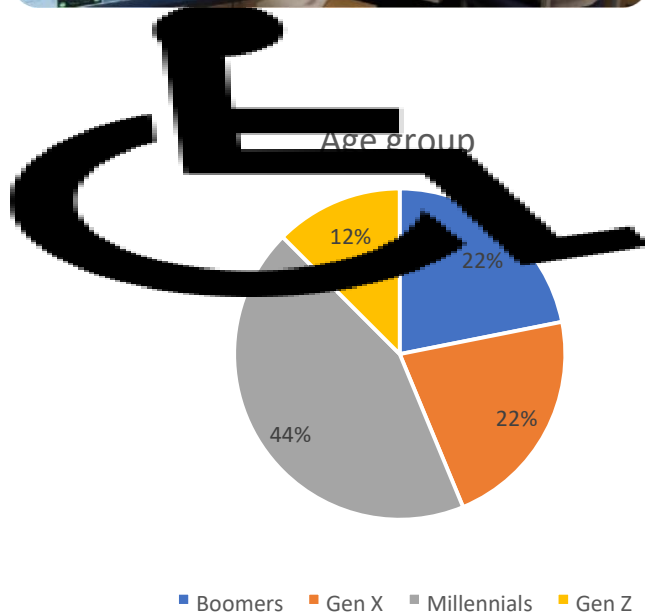
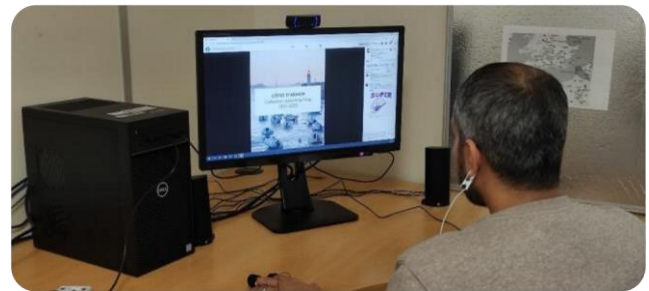
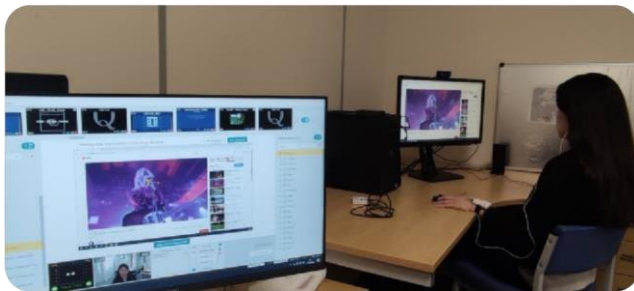
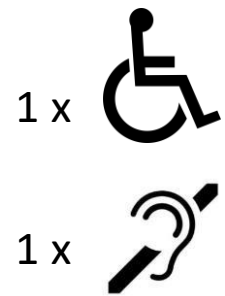
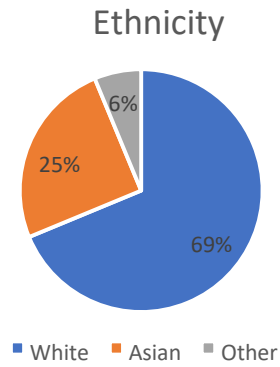
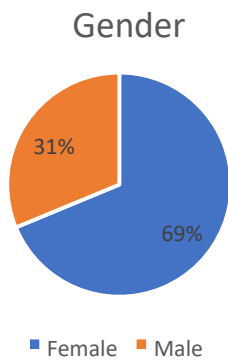
Peut-être trop de texte au début

Digital Lab Testing - ARC - Visite gui(n)dee



Participant demographics

Marketing tests were conducted with 32 participants. All the participants tested the English content and 14 tested the French content. Participants ranged from 18 to 78 years old and the majority were female with a white ethnic background.



	Born	Ages
Gen Z	1997 – 2012	10 – 25
Millennials	1981 – 1996	26 – 41
Gen X	1965 – 1980	42 – 57
Boomers II	1955 – 1964	58 – 67
Boomers I	1946 – 1954	68 – 76
Post War	1928 – 1945	77 – 94

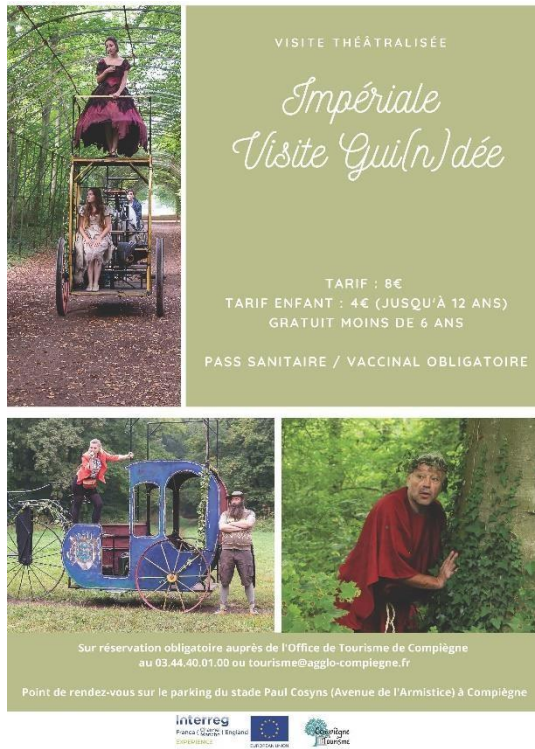
Source: www.beresfordresearch.com

Experiment settings

Number of participants: **15 participants**

Instructions:

“You will be now presented flyers in French.
Let us know how you liked the content afterwards.
Thanks!”



Exposure time: **30 seconds**

36 seconds

Surveys after exposure:

- Ad perception
- Intention to purchase

Eye-tracking - An explanation of visual attention

Eye tracking measures viewers' eye movements to understand the distribution of visual attention.

Quantification:

The process involves the camera tracking the pupil center and where the light reflects from the cornea, informing the eye tracker about the movement and direction of the eye.

Eye tracking is quantified in various different ways:

- **Gaze points** constitute the most basic unit of measure. One gaze point equals one raw sample captured by the eye tracker.
- Eye movements between fixations are known as **saccades**.
- A **fixation**, a period in which our eyes are locked toward a specific object. Typically, the fixation duration is 100-300 milliseconds.



Data Visualizations:

- **Heatmaps** are static or dynamic aggregations of gaze points or fixations



Low Attention  High Attention

revealing the distribution of visual attention. - **Visual attention** is aggregated across the entire audience, and displayed as “heat” overlaid on a stimulus. This heat can help identify what areas of the content draw the most visual attention, and what areas or elements may go missed entirely.

While **red areas** suggest a high number of gaze points, and therefore an increased level of interest, **yellow and green areas** show fewer gaze points, indicating a less engaged visual system.



Areas of Interest



Looking Time: **2 sec**
Time to Notice: **1.1 sec**
% to Notice: **85%**

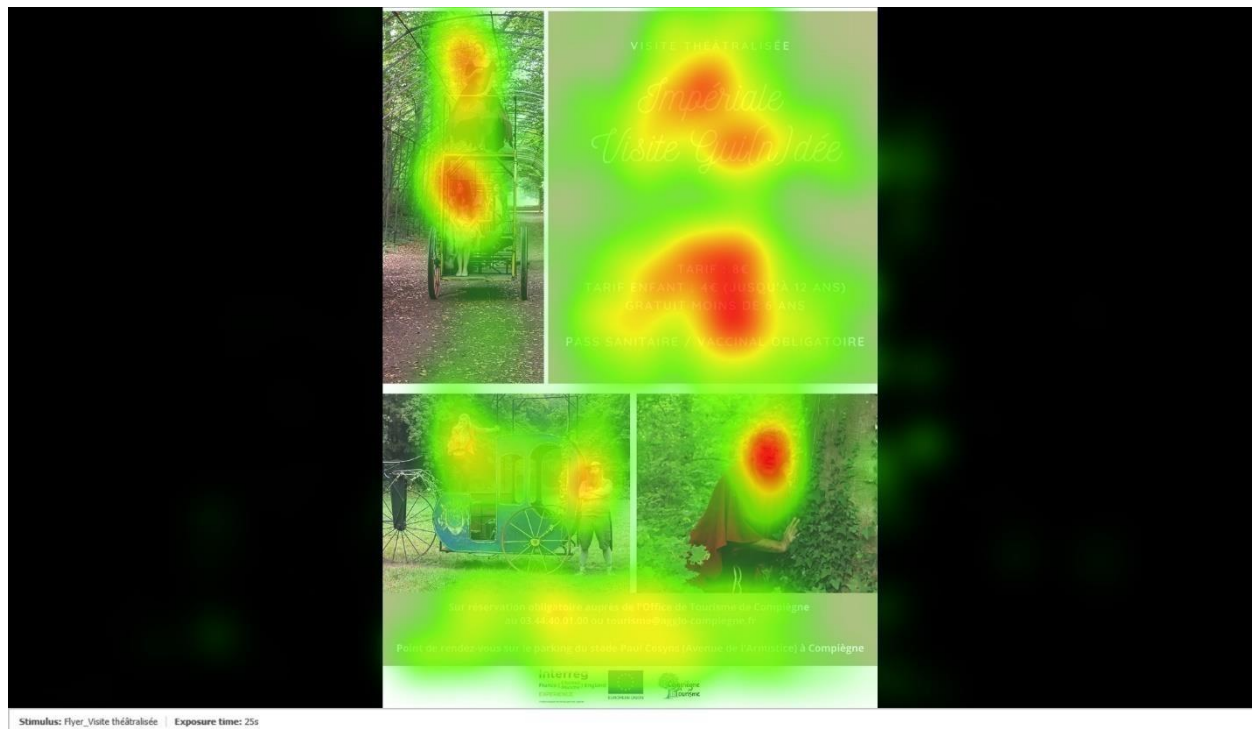
Looking Time: **4 sec**
Time to Notice: **2.3 sec**
% To Notice: **95%**

- **Areas of Interest (AOIs)** are user-defined subregions of a displayed stimulus. AOIs are an essential tool to incorporate into analysis for quantification and a more objective approach to interpreting eye tracking data. These metrics can **reveal how many respondents fixated in that area of interest, how long it took them to fixate** in that area, and **how long they spent looking**. These metrics can indicate if a stimulus is capturing visual attention in the intended way, or if the stimulus can be optimized to better appeal to natural visual patterns.

While eye tracking provides a wealth of information on where and when an individual looked, lengths of fixations, and the order in which elements are fixated upon, eye tracking does **not** reveal *why* an individual looked at a certain element, or *how they felt* while navigating a certain visual scene.

Eye-tracking - Results (leaflet)

Heatmap



Eye-tracking - Results (leaflet)

Gaze based metrics analyse searching behaviour

Dwell count = how often participants looked at this AOI in average / revisit = how often they

Areas of Interest



AOI metrics	Title	Price	Photo 1	Photo 2	Photo 3
Information					
Size (cm2)	81.4	33.9	105.9	86.5	83.4
Size (%)	5.1	2.1	6.7	5.4	5.3
Respondent base	15	15	15	15	15
Gaze based metrics					
Respondent count	15	15	14	15	15
Respondent ratio (%)	100	100	93.3	100	100
Dwell count	5.1	3.9	4	4.5	4.2
Revisit count	4.1	2.9	3	3.5	3.2
Hit time AOI (ms)	655.3	4792.6	6268.9	4750.4	5767.6
Dwell time (ms)	4199.4	2630.5	3072	2440.5	1837.8
Dwell time (%)	16.8	10.5	12.3	9.8	7.4
First dwell duration (ms)	932.2	1152.2	675	588.9	423.3
Fixation based metrics					
Respondent count	15	15	14	15	15
Respondent ratio (%)	100	100	93.3	100	100
Revisit count	3.1	1.8	2.2	2.7	2.3
Fixation count	17.7	13.5	10.1	9.3	6.3
TTFF AOI (ms)	695.2	4781.8	6282	5007.9	7030.7
Dwell time (ms)	3577.3	2793.1	2352.3	1995	1496.1
Dwell time (%)	14.3	11.2	9.4	8	6
First fixation duration (ms)	178.8	181.1	177.3	191.1	171.1

revisit this AOI

Hit time AOI (ms) = how long before people look at this AOI in average

Dwell time (ms) = how long people spent on this AOI in average / how long in (%)

Fixation based metrics analyse information processing

Fixation count = how often participants process information in this AOI in average

TTFF AOI (ms) = time to first fixation – how long before people process information in this AOI in average

Facial Expression Analysis - An explanation of expressed emotions

Facial expression analysis (FEA) measures movements of facial muscles to capture expressed emotions like joy, sadness, disgust, and overall valence in response to stimuli.

iMotions generates the following 7 emotions, created using Friesen & Ekman's EMFACS mappings. (Friesen, W. V., & Ekman, P. (1984). EMFACS7. Unpublished manuscript. Human Interaction Laboratory)



In addition to the expressions and emotions above, Affectiva AFFDEX computes Valence, Engagement, and Attention.

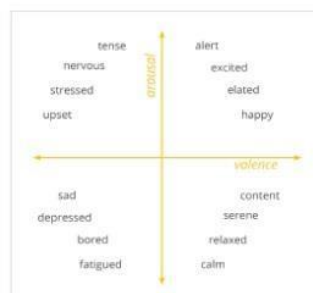
- **Valence** (-100 - 100): **A measure of how positive or negative the expression is.**

Factors that increase the likelihood of positive valence include: Smile, Cheek Raise.

Factors that increase the likelihood of negative valence include: Inner Brow Raise, Brow Furrow, Nose Wrinkle, Upper Lip Raise, Lip Corner Depressor, Chin Raise, Lip Press, Lip Suck.

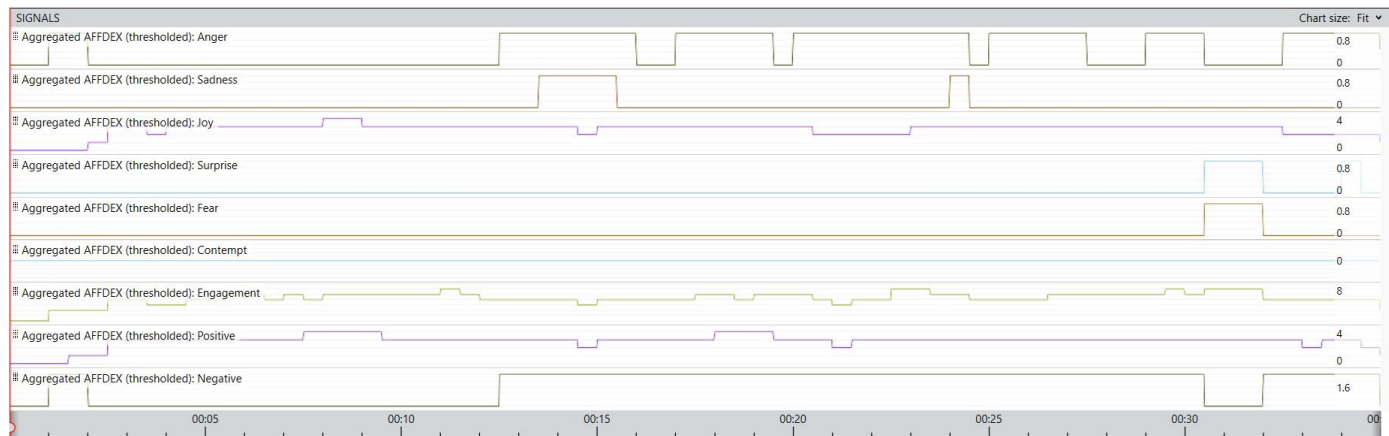
- **Engagement** (0 - 100): **A measure of emotional responsiveness triggered by the content, whether positive or negative.**

Calculated as the mean of the highest evidence scores from the upper (Brow raise, Brow furrow, Nose wrinkle) and lower face region (Lip corner depressor, Chin raise, Lip pucker, Lip press, Mouth open, Lip suck, Smile), respectively. - **Attention** (0-100): **A measure of point of focus of the user based on the head position.**



Facial expressions provide information on what is *expressed*. One of the core limitations of facial expression analysis is its inability to assess someone's *emotional arousal*, that is, the intensity of an emotion.

Facial Expression Analysis - Results (video)



Threshold was set to 50% likelihood representing a moderately strong display of facial response

Average emotional response for a video

Joy: At the highest 26% of participants felt joy **Anger, sadness:** Peaks for 6% participants **Surprise and fear:** Peaks for 6% participants **Engagement** was set between 26 and 46% of participants **Positive emotions** felt by 26% of participants at the peak **Negative emotions** felt by 6% of participants

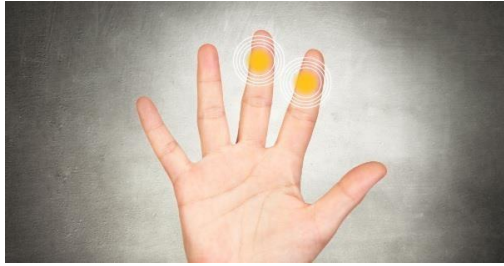
Galvanic Skin Response - An explanation of emotional arousal

Galvanic Skin Response (GSR) measures emotional arousal via levels of perspiration on the surface of the skin, indicating the intensity of emotional response to stimuli.

Quantification:

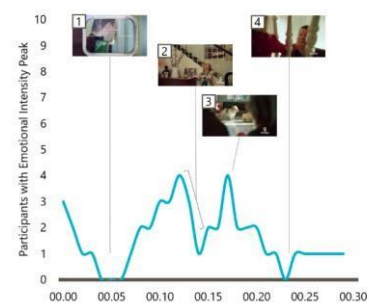
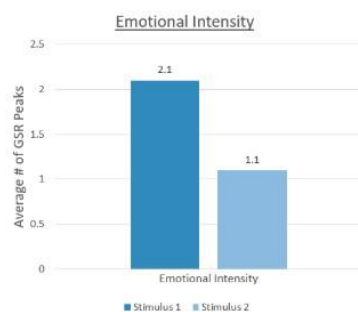
When sweat glands are triggered, they secrete moisture through pores towards the skin surface. By changing the balance of positive and negative ions in the secreted fluid, electrical current flows more readily, resulting in measurable changes in skin conductance. Skin conductivity is controlled on an entirely **subconscious level**.

- A **GSR peak** is a biological indicator that something relevant happened at that moment – an emotional connection was made. GSR peaks per minute indicates, on average, how many emotional events occurred every 60 seconds. The higher the number, the more of an emotional response the viewers were having during the content or experience.



Data Visualizations:

- **Overall scores** can be compared between two stimuli
- **Emotional intensity** can be measured on a moment to moment basis to better understand the participants' emotional journey while being exposed to video media content

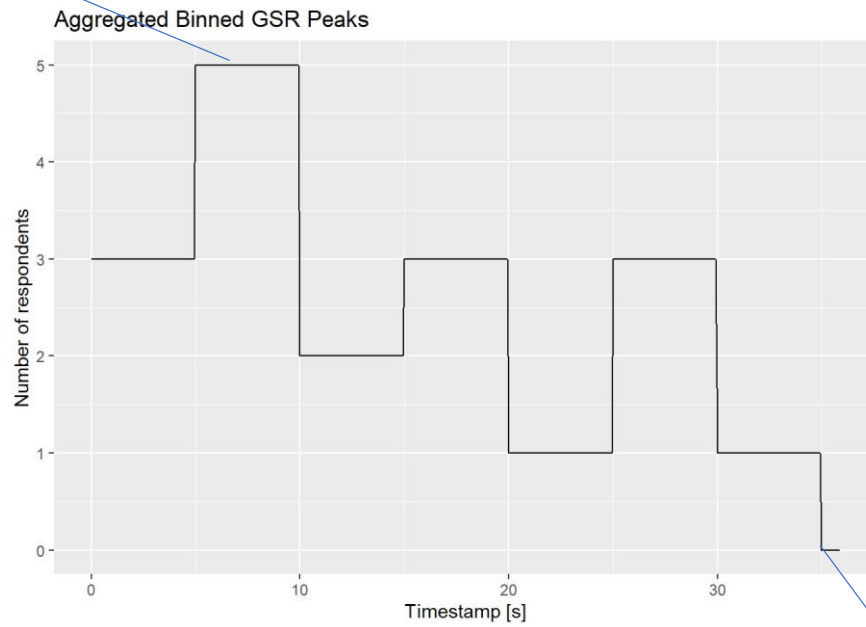


It is important to note that while GSR can measure if there is an emotional response and the intensity of an emotional response, it does **not** measure the valence, i.e. whether that emotional response is positive or negative.

Galvanic Skin Response - Results (video)

Methods

GSR aggregation is accomplished based on binarization of the signal. iMotions can count the number of respondents that had “a response” (at least one GSR peak) in a time window: 5000 [ms]. The aggregated result therefore relates directly to the audience and the time window, e.g., 10 out of 29 respondents had a response in the time interval 02:00 - 02:09.



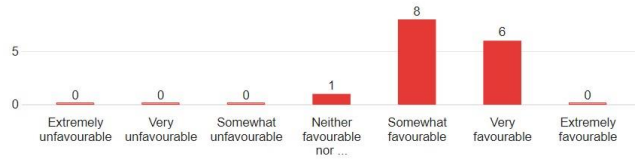
The segment contains 31 respondents. Of these, 15 have GSR data. During this stimulus, 5 respondents had at least one peak.



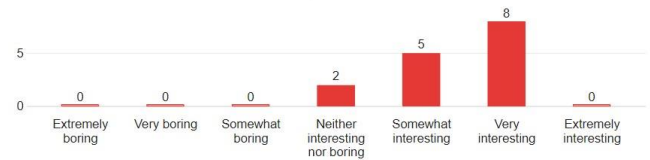
Survey - Results

Ad perception = 5.37/7

Q1 - Aad - Please rate from 1 to 7 your overall reaction to the ad

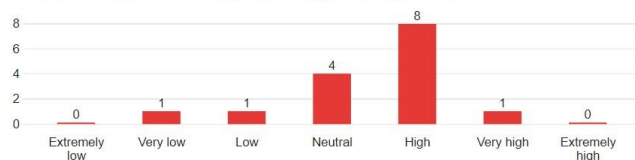


Q2 - Aad - Please rate from 1 to 7 your overall reaction to the ad

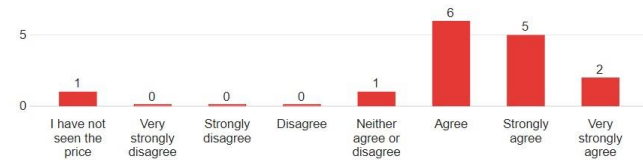


Intention to purchase = 4.72/7

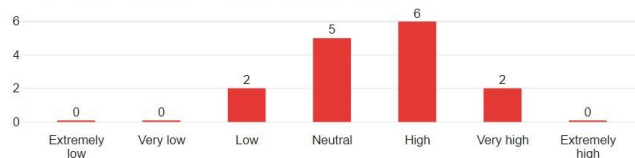
Q3 - IP - The likelihood of purchasing this experience is



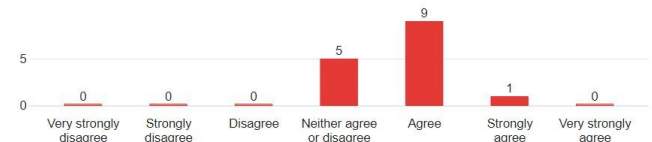
Q4 - IP - At the price shown, I would consider buying the experience



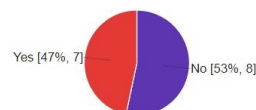
Q5 - IP - My willingness to buy this experience is



Q6 - IP - I would recommend to others to purchase this experience



Q7 - Have you ever done this or a similar experience before?



Recommendations

Good flyer with nice design and photos

Video provoking somehow positive emotions (FEA) but with low intensity (GSR).

Consider recording the actors explaining the story since it would contribute to the positive impacts instead of music only. A mixture of storytelling from actors and music could work better.

Bon flyer avec un beau design et photos

La vidéo a suscité des émotions positives mais avec peu d'intensité

Peut-être recueillir les enregistrements des acteurs pour contribuer à l'impact positif à la place de la musique seule. Un mix entre story-telling des acteurs et la musique pourrait mieux fonctionner.

Digital Lab Testing - ARC - Yoga au Cloître

Yoga au Cloître Saint-Corneille
Vivez une expérience de zenitude

Découvrez la pratique du Yoga au cœur d'un édifice emblématique de Compiègne. Le Jardin du Cloître Saint-Corneille vous ouvre ses portes pour vous initier à cette pratique millénaire accessible à tous. Inspirez et expirez à l'endroit même où les Chanoines méditaient...

Alliant postures, étirements et respirations profondes, le Hatha Yoga consiste en des enchaînements plus ou moins dynamiques, avec un travail d'ancrage et musculaire complet.

Dans le Jardin du Cloître Saint-Corneille
Entrée rue Saint-Corneille, Compiègne

Pensez à apporter un tapis ou un plaid et terminez votre immersion relaxante par une visite libre du musée. En cas de pluie, la séance se déroulera dans la galerie Ouest du musée du Cloître.

15€

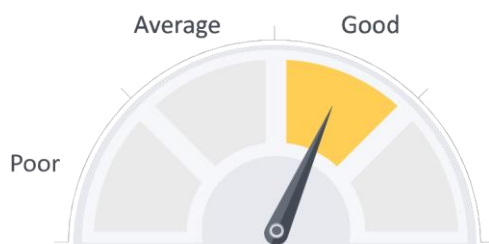
Informations et réservation obligatoire à l'Office de Tourisme
> 03.44.40.01.00
> tourisme@agglo-compiegne.fr

ARC COMPIEGNE

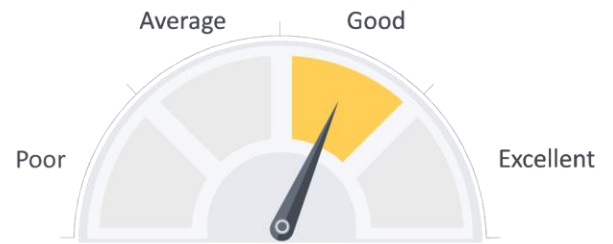
Office de Tourisme

interreg France - Compiègne

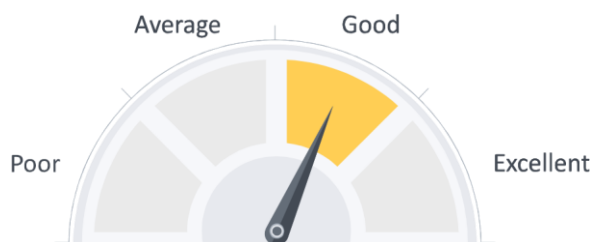
European Union

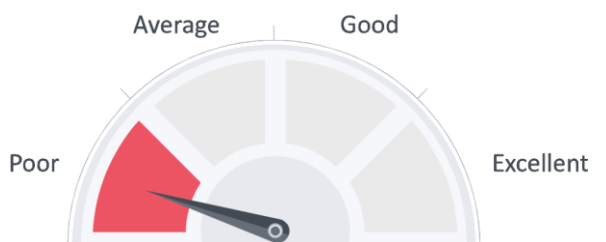
Ad perception



Intention to purchase



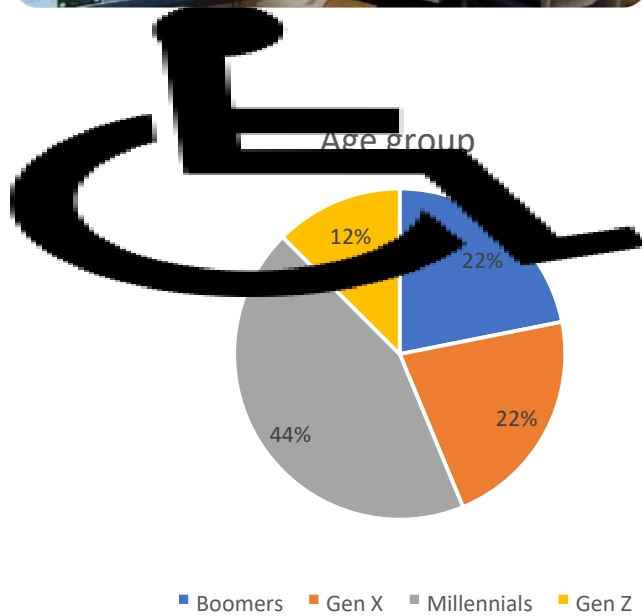
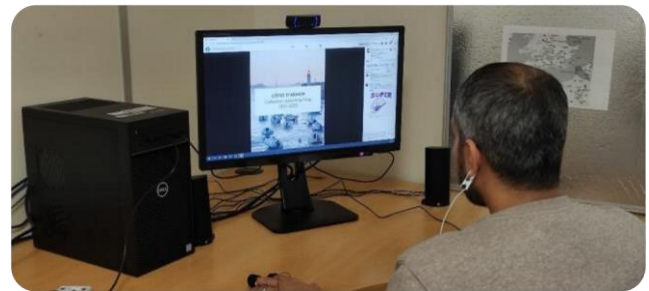
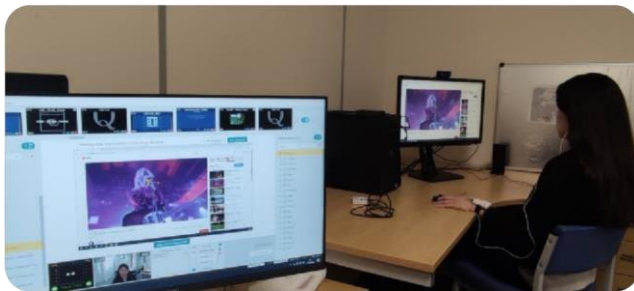
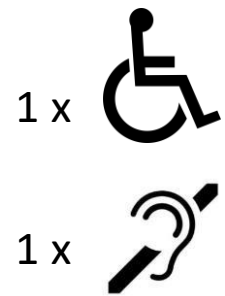
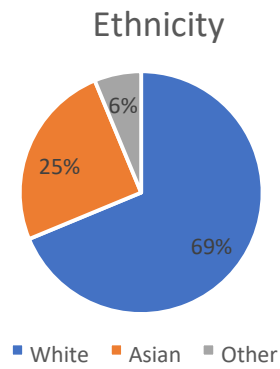
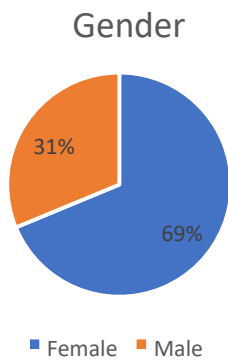
Visual attention



Emotional response

Participant demographics

Marketing tests were conducted with 32 participants. All the participants tested the English content and 14 tested the French content. Participants ranged from 18 to 78 years old and the majority were female with a white ethnic background.



	Born	Ages
Gen Z	1997 – 2012	10 – 25
Millennials	1981 – 1996	26 – 41
Gen X	1965 – 1980	42 – 57
Boomers II	1955 – 1964	58 – 67
Boomers I	1946 – 1954	68 – 76
Post War	1928 – 1945	77 – 94

Source: www.beresfordresearch.com

Experiment settings

Number of participants: **15**
participants

Instructions:

“You will be now presented flyers in French.
Let us know how you liked the content afterwards.
Thanks!”

Yoga au Cloître Saint-Corneille
Vivez une expérience de zenitude

Découvrez la pratique du Yoga au cœur d'un édifice emblématique de Compiègne. Le Jardin du Cloître Saint-Corneille vous ouvre ses portes pour vous initier à cette pratique millénaire accessible à tous. Inspirez et expirez à l'endroit même où les Chanoines méditaient...

Alliant postures, étirements et respirations profondes, le Hatha Yoga consiste en des enchaînements plus ou moins dynamiques, avec un travail d'ancrage et musculaire complet.

Dans le Jardin du Cloître Saint-Corneille
Entrée rue Saint-Corneille, Compiègne

Pensez à apporter un tapis ou un plaid et terminez votre immersion relaxante par une visite libre du musée. En cas de pluie, la séance se déroulera dans la galerie Ouest du musée du Cloître.

15€

Informations et réservation
obligatoire à l'Office de Tourisme

> 03.44.40.01.00
> tourisme@agglo-compiegne.fr

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Office de Tourisme
COMPIÈGNE

interreg
Princed'Europe
COMPIÈGNE

Logo of the European Union



Exposure time: **30 seconds**

Surveys after exposure:

- Ad perception
- Intention to purchase

Eye-tracking - An explanation of visual attention

Eye tracking measures viewers' eye movements to understand the distribution of visual attention.

Quantification:

The process involves the camera tracking the pupil center and where the light reflects from the cornea, informing the eye tracker about the movement and direction of the eye.

Eye tracking is quantified in various different ways:

- **Gaze points** constitute the most basic unit of measure. One gaze point equals one raw sample captured by the eye tracker.
- Eye movements between fixations are known as **saccades**.
- A **fixation**, a period in which our eyes are locked toward a specific object. Typically, the fixation duration is 100-300 milliseconds.



Data Visualizations:

- **Heatmaps** are static or dynamic aggregations of gaze points or fixations



Low Attention  High Attention

revealing the distribution of visual attention. - **Visual attention** is aggregated across the entire audience, and displayed as “heat” overlaid on a stimulus. This heat can help identify what areas of the content draw the most visual attention, and what areas or elements may go missed entirely.

While **red areas** suggest a high number of gaze points, and therefore an increased level of interest, **yellow and green areas** show fewer gaze points, indicating a less engaged visual system.



Areas of Interest



Looking Time: **2 sec**
Time to Notice: **1.1 sec**
% to Notice: **85%**

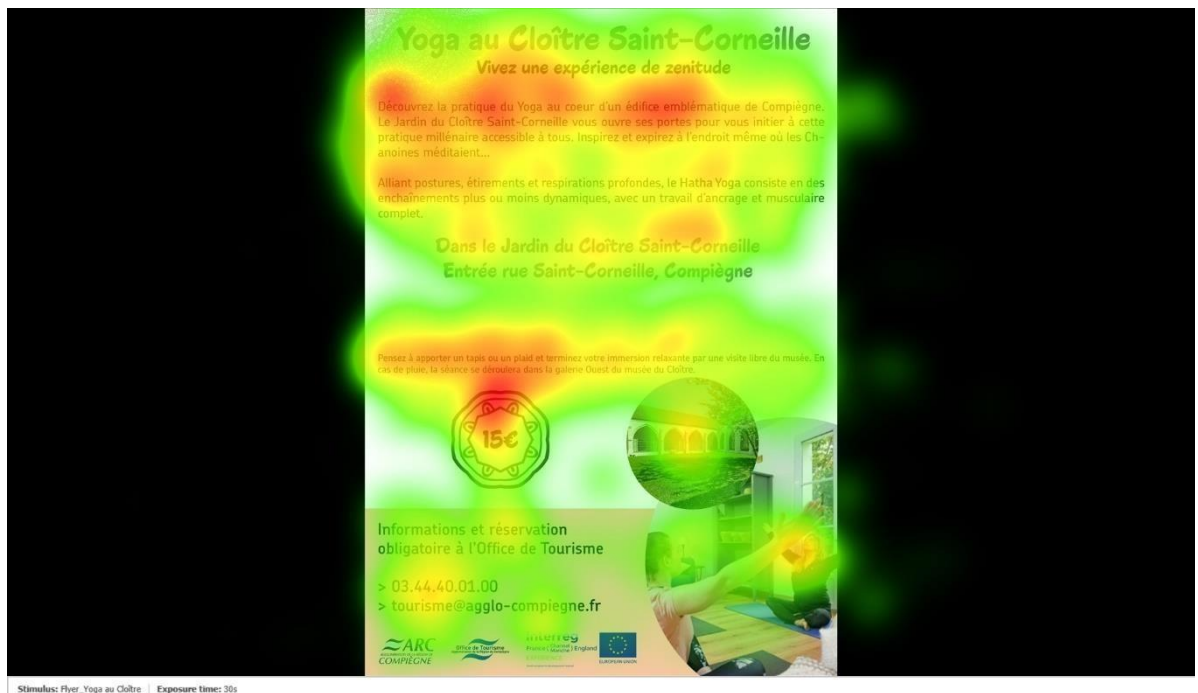
Looking Time: **4 sec**
Time to Notice: **2.3 sec**
% To Notice: **95%**

- **Areas of Interest (AOIs)** are user-defined subregions of a displayed stimulus. AOIs are an essential tool to incorporate into analysis for quantification and a more objective approach to interpreting eye tracking data. These metrics can **reveal how many respondents fixated in that area of interest, how long it took them to fixate** in that area, and **how long they spent looking**. These metrics can indicate if a stimulus is capturing visual attention in the intended way, or if the stimulus can be optimized to better appeal to natural visual patterns.

While eye tracking provides a wealth of information on where and when an individual looked, lengths of fixations, and the order in which elements are fixated upon, eye tracking does **not** reveal *why* an individual looked at a certain element, or *how they felt* while navigating a certain visual scene.

Eye-tracking - Results

Heatmap



Eye-tracking - Results

Areas of Interest

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15€

Informations et réservation obligatoire à l'Office de Tourisme
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ARC COMPIEGNE | Office de Tourisme | France (Normandie) | Europe

AOI metrics	Title	Price	Photos
Information			
Size (cm2)	64.1	32.4	131.1
Size (%)	4	2	8.3
Respondent base	15	15	15
Gaze based metrics			
Respondent count	14	15	15
Respondent ratio (%)	93.3	100	100
Dwell count	4.2	3.3	4.5
Revisit count	3.2	2.3	3.5
Hit time AOI (ms)	1292	15111.8	6558.9
Dwell time (ms)	3336.3	1615.5	2723.3
Dwell time (%)	11.1	5.4	9.1
First dwell duration (ms)	1120.3	380	455
Fixation based metrics			
Respondent count	14	14	14
Respondent ratio (%)	93.3	93.3	93.3
Revisit count	1.7	2.1	2.6
Fixation count	15.2	7.6	10.8
TTFF AOI (ms)	1328.1	15839.6	7029.2
Dwell time (ms)	3070.3	1553.6	2027.2
Dwell time (%)	10.2	5.2	6.8
First fixation duration (ms)	182.4	228	135.9

Gaze based metrics analyse searching behaviour

Dwell count = how often participants looked at this AOI in average / revisit = how often they revisit this AOI

Hit time AOI (ms) = how long before people look at this AOI in average

Dwell time (ms) = how long people spent on this AOI in average / how long in (%)

Fixation based metrics analyse information processing

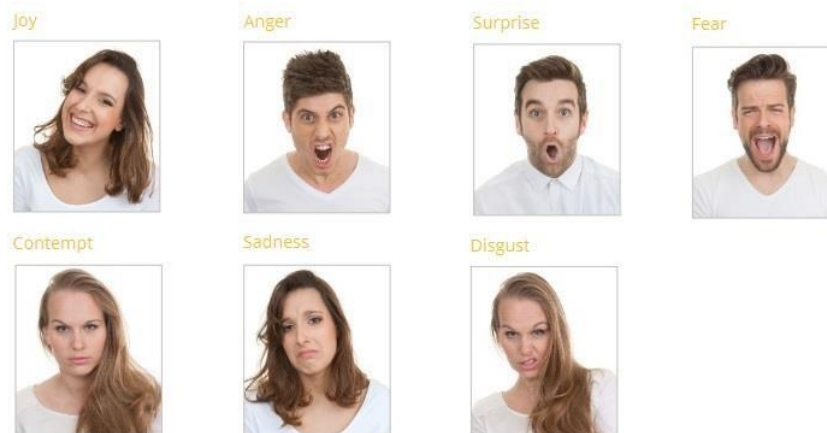
Fixation count = how often participants process information in this AOI in average

TTFF AOI (ms) = time to first fixation – how long before people process information in this AOI in average

Facial Expression Analysis - An explanation of expressed emotions

Facial expression analysis (FEA) measures movements of facial muscles to capture expressed emotions like joy, sadness, disgust, and overall valence in response to stimuli.

iMotions generates the following 7 emotions, created using Friesen & Ekman's EMFACS mappings. (Friesen, W. V., & Ekman, P. (1984). EMFACS7. Unpublished manuscript. Human Interaction Laboratory)



In addition to the expressions and emotions above, Affectiva AFFDEX computes Valence, Engagement, and Attention.

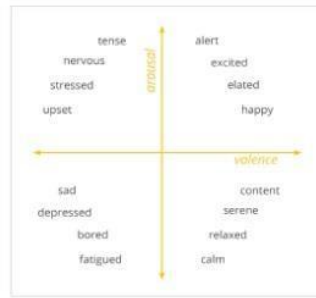
- **Valence** (-100 - 100): **A measure of how positive or negative the expression is.**

Factors that increase the likelihood of positive valence include: Smile, Cheek Raise.

Factors that increase the likelihood of negative valence include: Inner Brow Raise, Brow Furrow, Nose Wrinkle, Upper Lip Raise, Lip Corner Depressor, Chin Raise, Lip Press, Lip Suck.

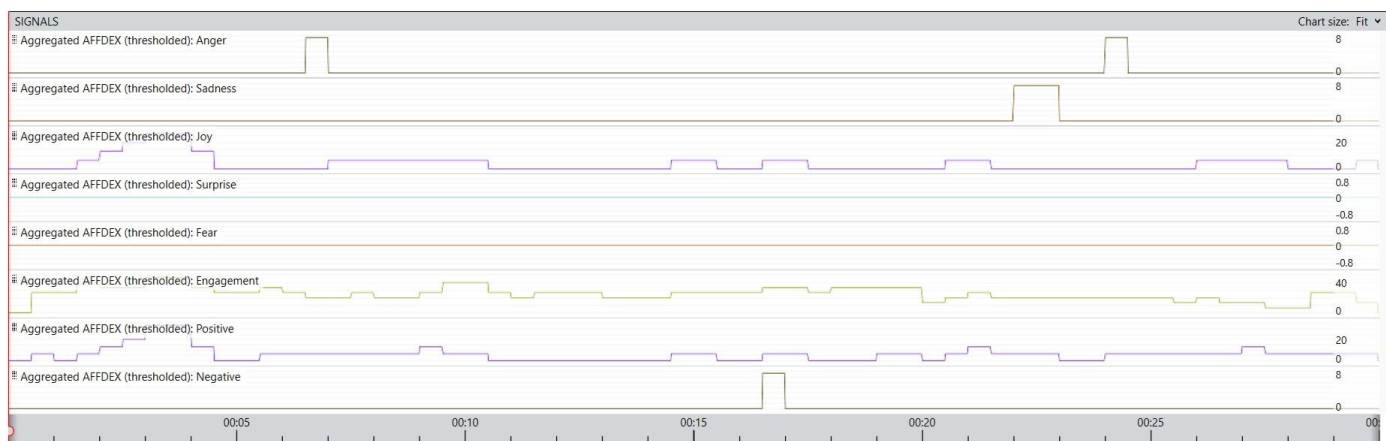
- **Engagement** (0 - 100): **A measure of emotional responsiveness triggered by the content, whether positive or negative.**

Calculated as the mean of the highest evidence scores from the upper (Brow raise, Brow furrow, Nose wrinkle) and lower face region (Lip corner depressor, Chin raise, Lip pucker, Lip press, Mouth open, Lip suck, Smile), respectively. - **Attention** (0-100): **A measure of point of focus of the user based on the head position.**



Facial expressions provide information on what is *expressed*. One of the core limitations of facial expression analysis is its inability to assess someone's *emotional arousal*, that is, the intensity of an emotion.

Facial Expression Analysis - Results



Threshold was set to 50% likelihood representing a moderately strong display of facial response

Low emotional response for a flyer

Joy: At the beginning 26% of participants felt joy then down to 6% **Anger, sadness:** Peaks for 6% participants

Surprise and fear: None

Engagement was set between 13 and 40% of participants **Positive emotions** felt by 33% of participants at the beginning. **Negative emotions** felt by 6% of participants

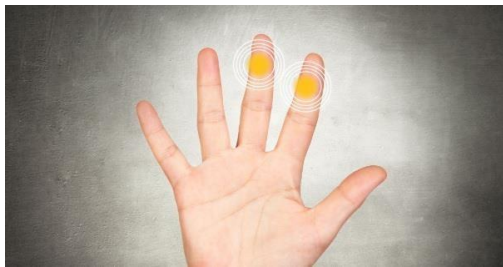
Galvanic Skin Response - An explanation of emotional arousal

Galvanic Skin Response (GSR) measures emotional arousal via levels of perspiration on the surface of the skin, indicating the intensity of emotional response to stimuli.

Quantification:

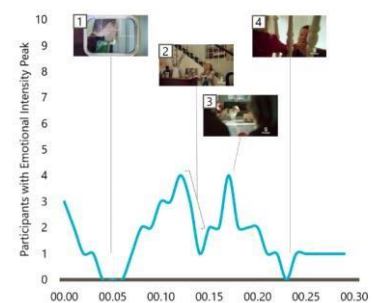
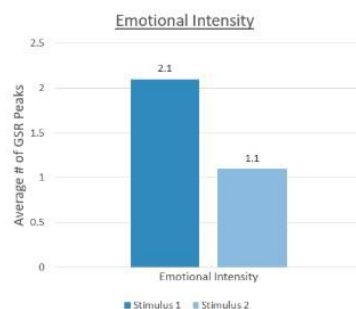
When sweat glands are triggered, they secrete moisture through pores towards the skin surface. By changing the balance of positive and negative ions in the secreted fluid, electrical current flows more readily, resulting in measurable changes in skin conductance. Skin conductivity is controlled on an entirely **subconscious level**.

- A **GSR peak** is a biological indicator that something relevant happened at that moment – an emotional connection was made. GSR peaks per minute indicates, on average, how many emotional events occurred every 60 seconds. The higher the number, the more of an emotional response the viewers were having during the content or experience.



Data Visualizations:

- **Overall scores** can be compared between two stimuli
- **Emotional intensity** can be measured on a moment to moment basis to better understand the participants' emotional journey while being exposed to video media content

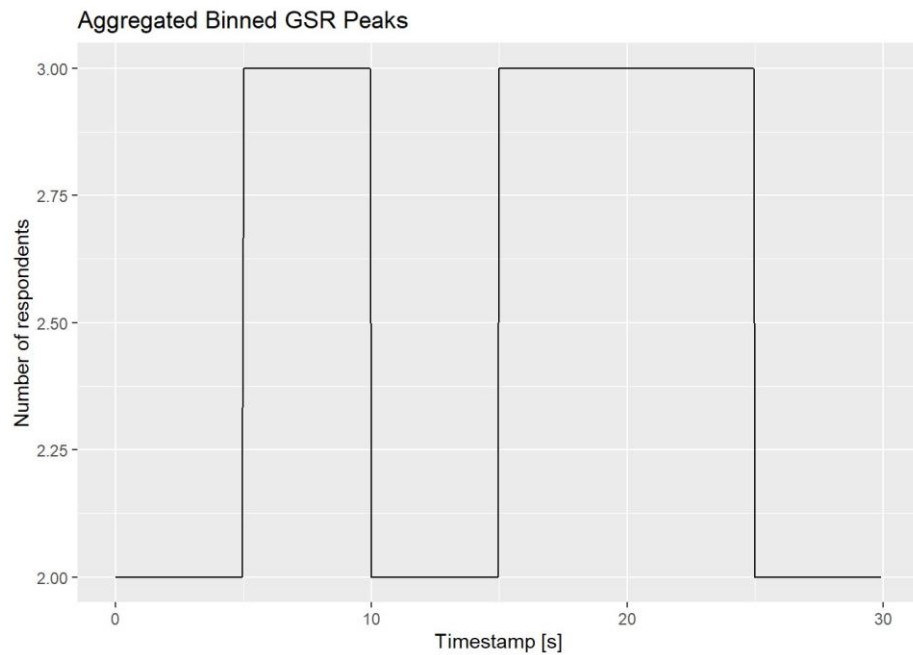


It is important to note that while GSR can measure if there is an emotional response and the intensity of an emotional response, it does **not** measure the valence, i.e. whether that emotional response is positive or negative.

Galvanic Skin Response - Results

Methods

GSR aggregation is accomplished based on binarization of the signal. iMotions can count the number of respondents that had “a response” (at least one GSR peak) in a time window: 5000 [ms]. The aggregated result therefore relates directly to the audience and the time window, e.g., 10 out of 29 respondents had a response in the time interval 02:00 - 02:09.

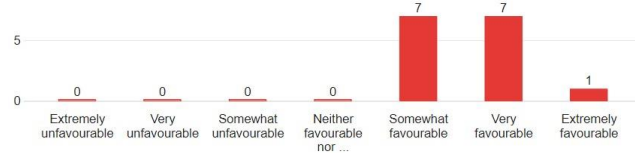


The segment contains 31 respondents. Of these, 15 have GSR data.
During this stimulus, 8 respondents had at least one peak.

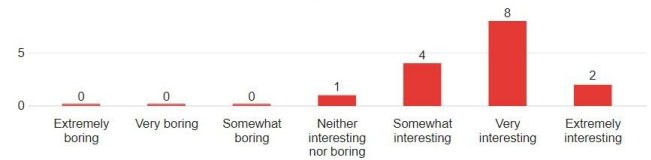
Survey - Results

Ad perception = 5.67/7

Q1 - Aad - Please rate from 1 to 7 your overall reaction to the ad

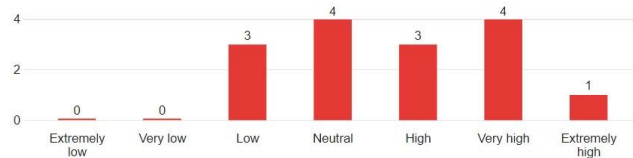


Q2 - Aad - Please rate from 1 to 7 your overall reaction to the ad

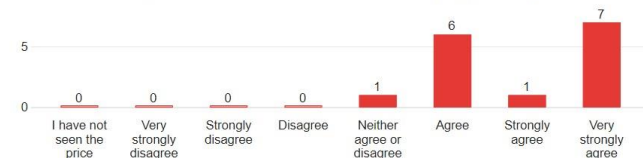


Intention to purchase = 5.22/7

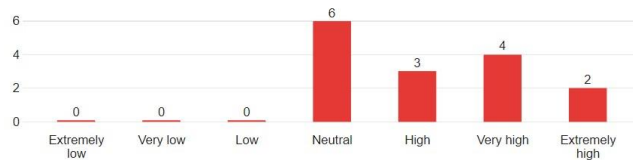
Q3 - IP - The likelihood of purchasing this experience is



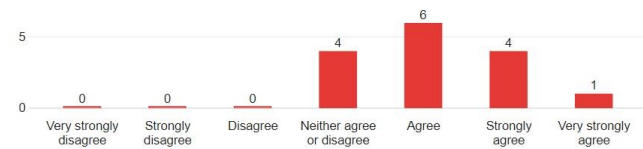
Q4 - IP - At the price shown, I would consider buying the experience



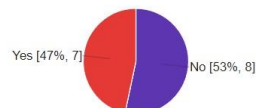
Q5 - IP - My willingness to buy this experience is



Q6 - IP - I would recommend to others to purchase this experience



Q7 - Have you ever done this or a similar experience before?



Recommendations

Participants liked this flyer and I think engaging in yoga activities in such a unique place is attractive.

However, the emotional response was somewhat low. Good at the beginning but then the interest dropped significantly.

The price was visible, maybe add/change another photo showing the uniqueness of the place.

Les participants au lab ont bien aimé le flyer et pensent que c'est engageant pour cette activité dans ce lieu.

Mais, la réponse émotionnelle n'est pas intense. Bonne au début mais en chute.

Le prix était bien visible, peut-être modifier les photos pour mettre l'accent sur la singularité du lieu.