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ADVERTISING PERFORMANCE IN VIRTUAL REALITY

Transforming a virtual experience into a real world memory

Q4 2017

Study Background

OBJECTIVE + METHODOLOGY
MEMORY WITHIN VIRTUAL WORLDS

Objective:

To understand ad recall and ad decay within virtual reality through comparing different levels of immersive ad units and comparing ad decay rates over 24 hours.

Methodology:

Individuals 18+ were recruited from an online respondent sourcing panel and social media. 54 respondents played a virtual reality game and were exposed to one of three ad format experiences. Half of respondents took a survey same day of study, second half were polled via email on the following day. Biometric measurements were taken on a sample of players, one for each ad format. Valence was measured using electroencephalography (EEG), facial electromyography (EMG), Arousal was measured via galvanic skin response (GSR), and heartrate.

Research Partners:

Provided the game and custom ad units

Audit and advisory on methodology and study design

Biometric capture

Game Format:
Game show, "Kiss or Kill". Contestants stand in front of a live host and answer trivia questions.

Ad display:

Logos surround player throughout game
n = 17

Video played after intro/before play
n = 18

3D object available once during game
n = 20

Survey Data

DEMOGRAPHICS

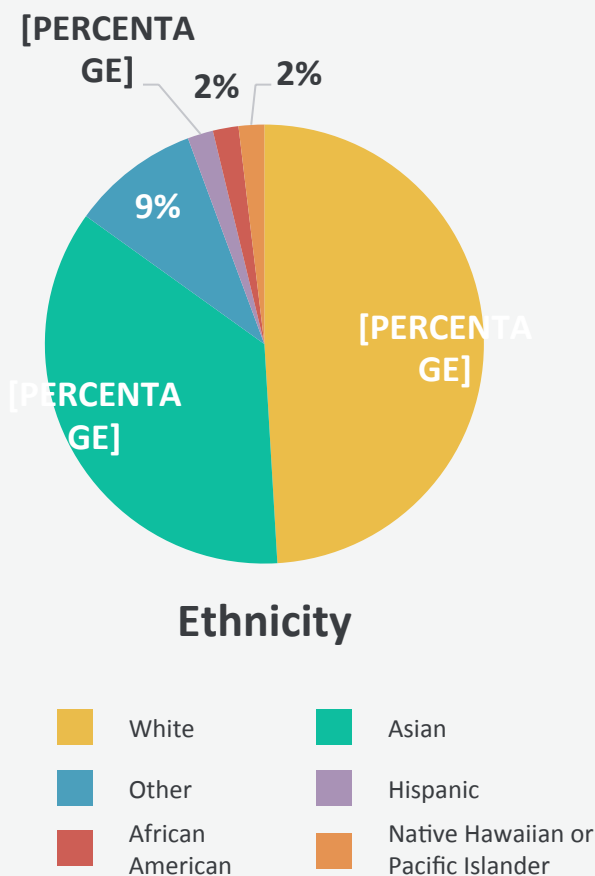## 8 OUT OF 10 RESPONDENTS HAVE USED A VR HEADSET PREVIOUSLY
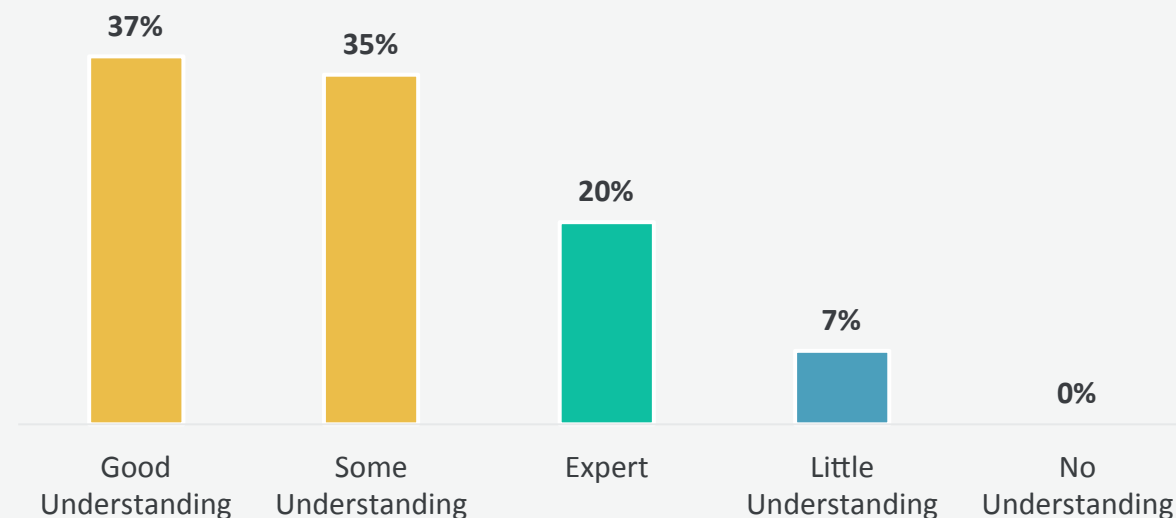
80%
Have used a VR headset previously

74%
Millennials (18-36)

70%
Male

Ethnicity

[PERCENTAGE] 2% 2%

9%

[PERCENTAGE]

[PERCENTAGE]

Legend:
- White
- Asian
- Other
- Hispanic
- African American
- Native Hawaiian or Pacific Islander

Self Reported Expertise in Immersive Tech

Good Understanding	Some Understanding	Expert	Little Understanding	No Understanding
37%	35%	20%	7%	0%

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DEVICE OWNERSHIP

TEST SUBJECTS ARE HIGHLY CONNECTED, OWNING AN AVERAGE OF SIX CONNECTED DEVICES

52%
Own an Immersive Tech Device

Device	%
Any Computer	94%
Laptop	94%
Desktop	48%
Smartphone	96%
Tablet	67%
Any TV	69%
Smart TV	52%
Internet-connected Game console	59%
Streaming Media Player	56%
Internet-connected Blu-ray Player	20%
Any CTV	80%
Immersive Tech Device	52%

Computers: Any Computer, Laptop, Desktop
Mobile: Smartphone, Tablet
Television: Any TV, Smart TV
CTV: Internet-connected Game console, Streaming Media Player, Internet-connected Blu-ray Player, Any CTV
Immersive Technology: Immersive Tech Device

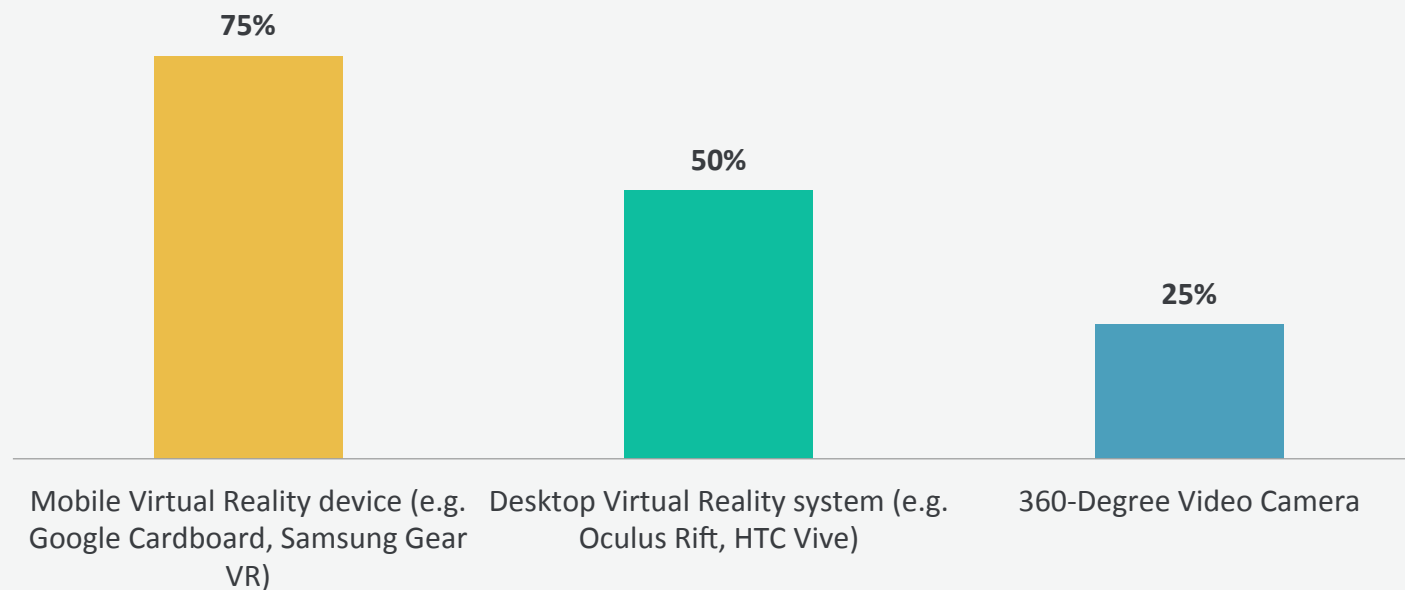Q4: Which of the following device(s) do you own? Base: n=54
*Immersive tech is defined by ownership of one or more of the following: Desktop VR system (e.g. Oculus Rift, HTC Vive or PS4), or mobile VR system (e.g. Google Cardboard, Samsung VR, or similar), or 360 degree camera.

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IMMERSIVE TECH OWNER
PLAYERS OWN AN AVERAGE OF TWO DEVICES

VR Device Ownership

75%	50%	25%
Mobile Virtual Reality device (e.g. Google Cardboard, Samsung Gear VR)	Desktop Virtual Reality system (e.g. Oculus Rift, HTC Vive)	360-Degree Video Camera

Immersive tech owners own

2

devices on average

44%

use their device at least a few times a week

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THOUGHTS ON IMMERSIVE TECH

RESPONDENTS FEEL OVERWHELMINGLY POSITIVE ABOUT VIRTUAL REALITY TECHNOLOGY

"Love it, can't wait till there are more opportunities for it …"

"There's no distractions in VR, it's much easier to dive deep…"

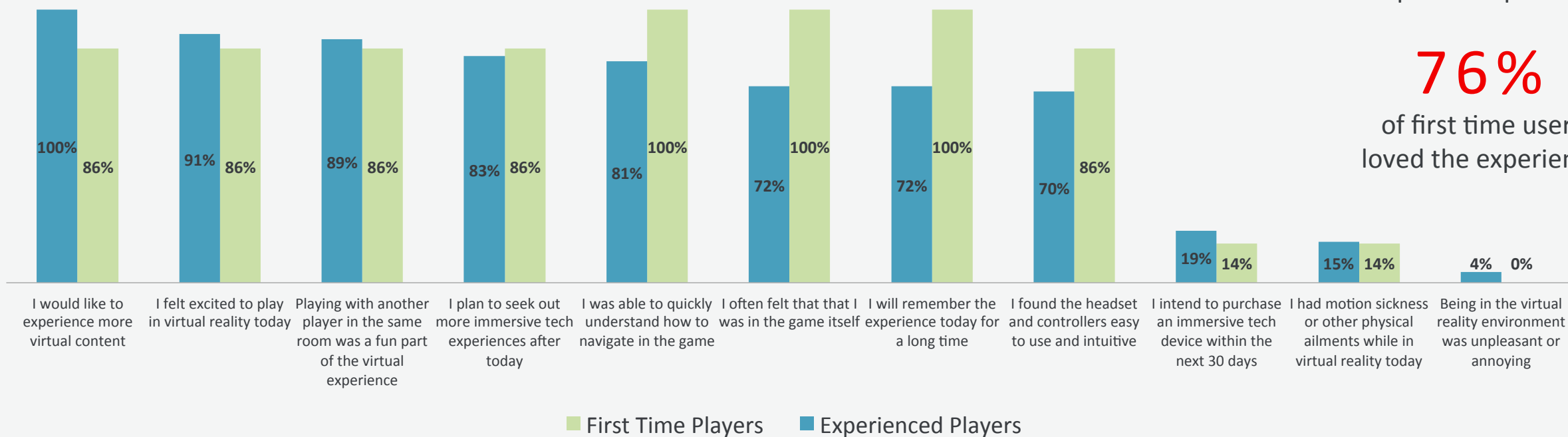"Always a great experience to be immersed in the content itself…"

"It has opened the idea of many possibilities. I look forward to the next level of gaming…"

"It's an incredible immersion that has to be experienced to be believed"

Q7: Please share with us how you feel about virtual reality content (such as 180/360 videos, virtual games, augmented reality games)? n=52

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VIRTUAL REALITY EXPERIENCE

EXPERIENCE WAS OVERWHELMINGLY POSITIVE FOR EXPERIENCED AND FIRST TIMERS, 76% FELT IT WAS AN EXPERIENCE THEY WOULD REMEMBER FOR A LONG TIME

How would you rate your VR experience today?

Statement	Experienced Players	First Time Players
I would like to experience more virtual content	100%	86%
I felt excited to play in virtual reality today	91%	86%
Playing with another player in the same room was a fun part of the virtual experience	89%	86%
I plan to seek out more immersive tech experiences after today	83%	86%
I was able to quickly understand how to navigate in the game	81%	100%
I often felt that that I was in the game itself	72%	100%
I will remember the experience today for a long time	72%	100%
I found the headset and controllers easy to use and intuitive	70%	86%
I intend to purchase an immersive tech device within the next 30 days	19%	14%
I had motion sickness or other physical ailments while in virtual reality today	15%	14%
Being in the virtual reality environment was unpleasant or annoying	4%	0%

First Time Players   **Experienced Players**

96%
Considered the experience positive

76%
of first time users loved the experience

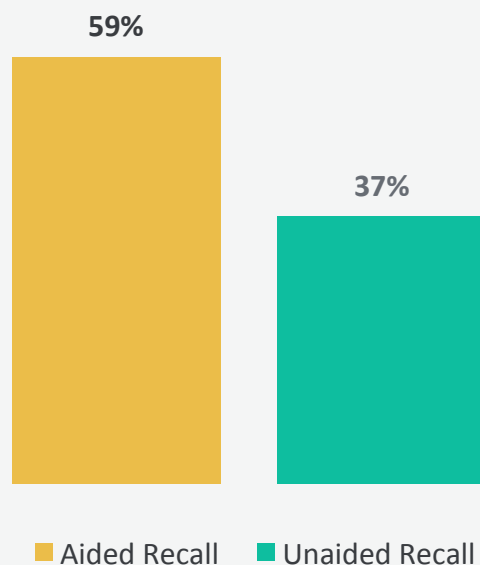Q10: How would you rate the overall experience of playing in virtual reality today?
Q12: Thinking about your overall virtual reality experience today, please choose your level of agreement with the following statements Base: n=54.
Q2: Have you ever used a virtual reality headset before? Experienced user Base n = 47, first time users Base n = 7
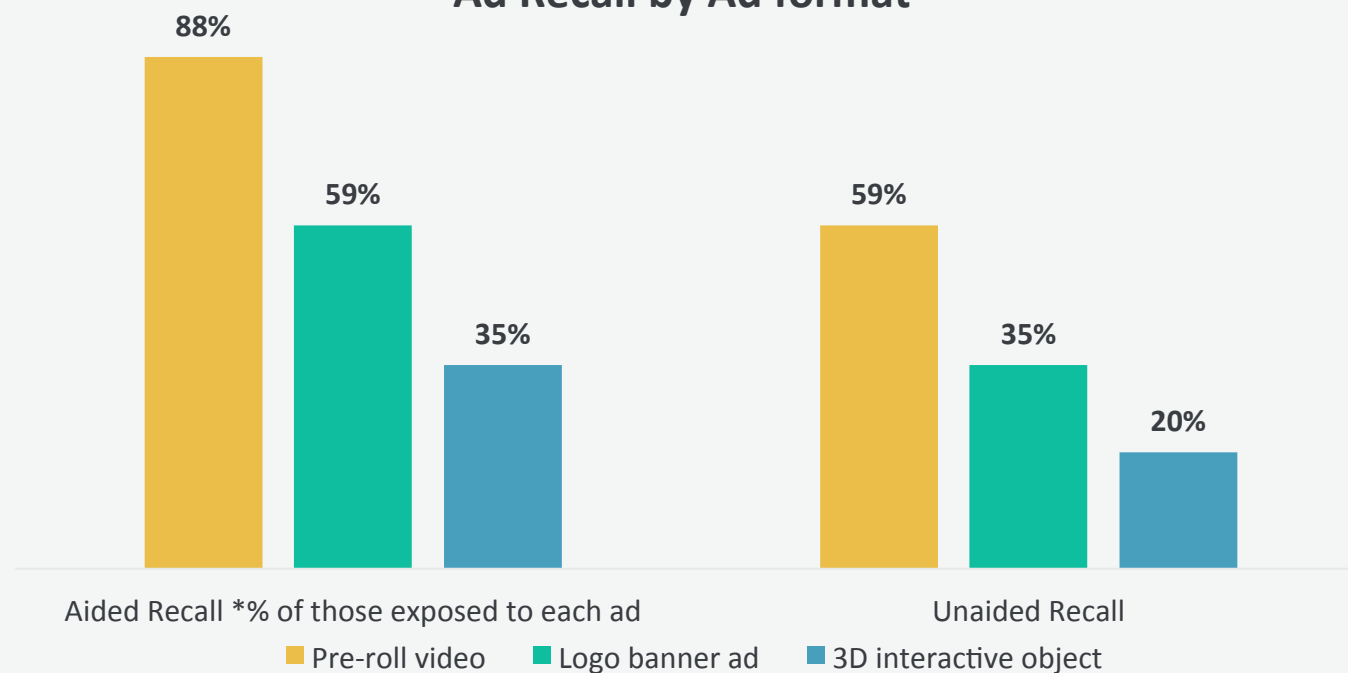
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AD RECALL SUMMARY

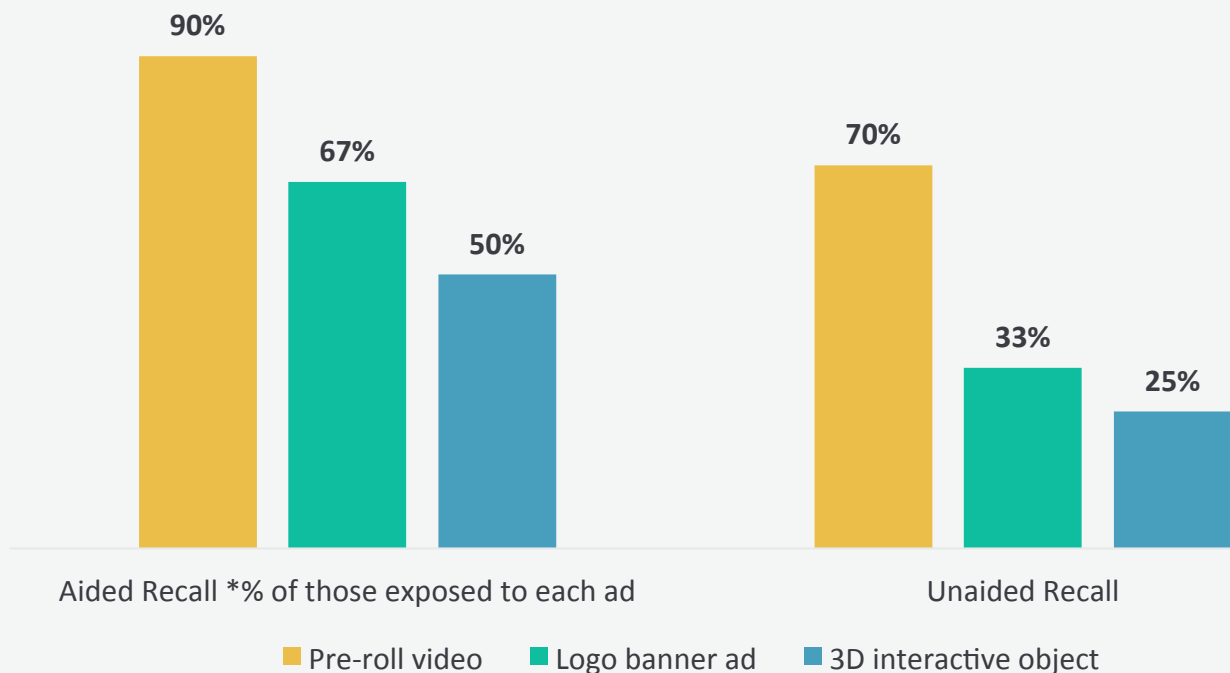## PRE-ROLL VIDEO AD MORE THAN 2X MORE MEMORABLE THAN 3D OBJECT

Ad Recall – All formats

59%

37%

- Aided Recall
- Unaided Recall

Ad Recall by Ad format

88%

59%

35%

59%

35%

20%

Aided Recall *% of those exposed to each ad

Unaided Recall

- Pre-roll video
- Logo banner ad
- 3D interactive object

RECALL DETAIL SAME DAY
VIDEO AD CAPTURED MEMORY IN 9 OUT OF 10 VIEWERS

Same Day Ad Recall by Ad format

90% 67% 50%

70% 33% 25%

Aided Recall *% of those exposed to each ad

Unaided Recall

■ Pre-roll video ■ Logo banner ad ■ 3D interactive object
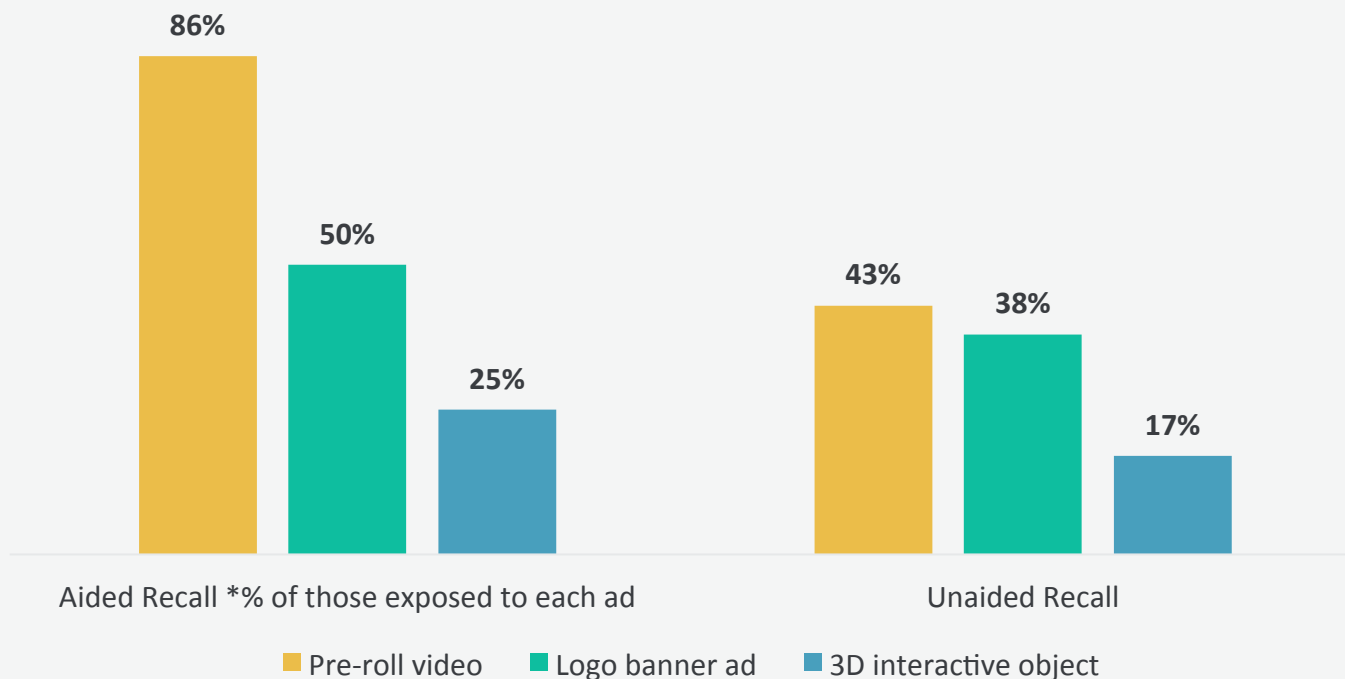
Same Day Ad Recall overall

70% 44%

Same Day

■ Aided Recall ■ Unaided Recall
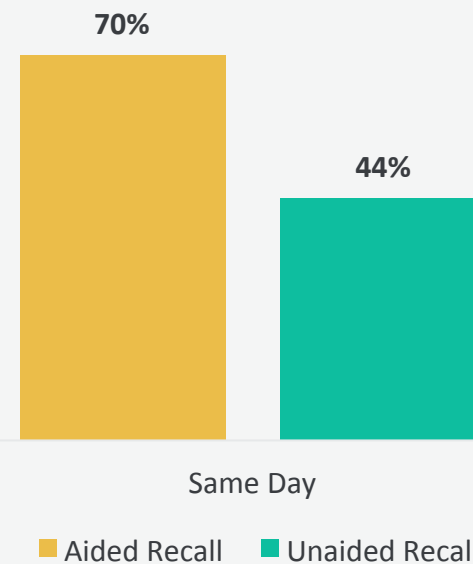
Q14: Do you recall seeing or hearing about any brands in the game you played today?
Q15: Do you recall seeing or hearing about any of the following brands in the game today?
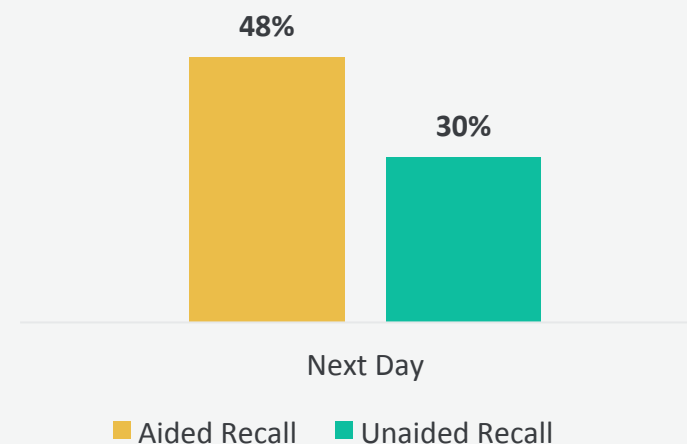Base Same Day Respondents n=27: Group Logo n=9, Group Pre-roll n=10, Group 3D object n=8

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RECALL DETAIL NEXT DAY
AD RECALL ONLY 4% LESS FOR VIDEO VIEWERS WHO ARE QUIZZED NEXT DAY
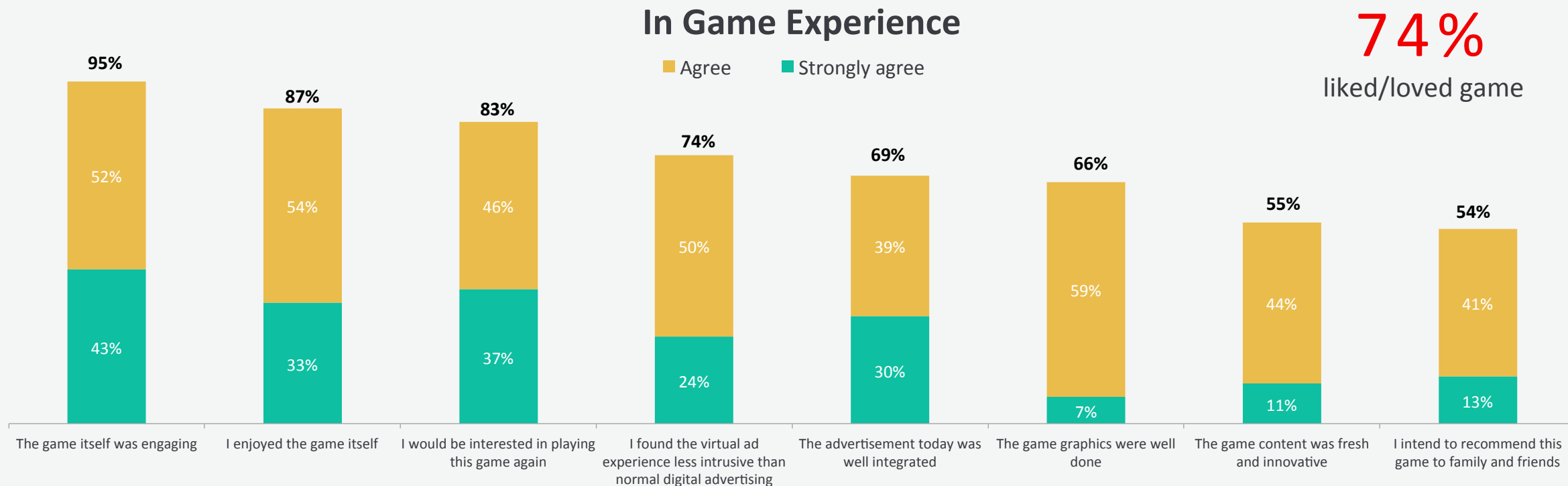
Next Day Ad Recall by Ad format

Ad Recall Next Day Overall

86%

50%

25%

43%

38%

17%

Aided Recall *% of those exposed to each ad

Unaided Recall

48%

30%

Next Day

- Pre-roll video
- Logo banner ad
- 3D interactive object

- Aided Recall
- Unaided Recall

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EXPERIENCE WITH GAME

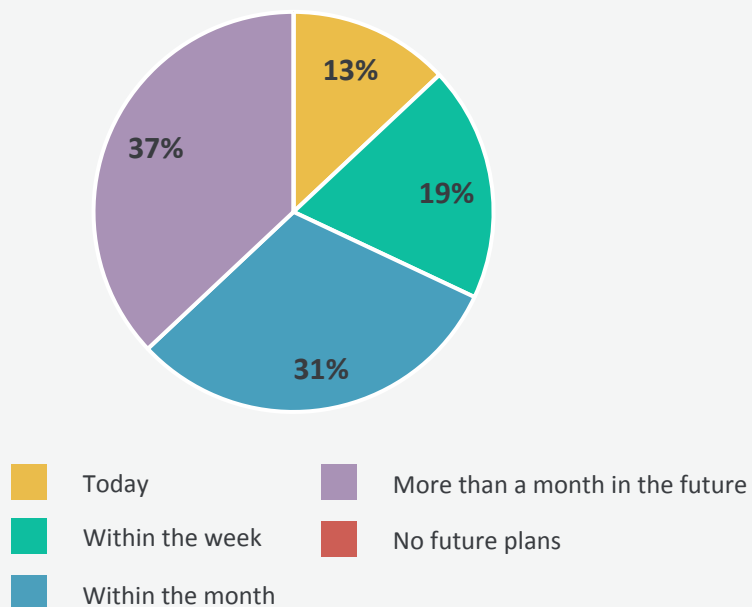## 7 OUT OF 10 RESPONDENTS FOUND THE VIRTUAL AD EXPERIENCE LESS INTRUSIVE THAN OTHER AD FORMATS

In Game Experience

74%
liked/loved game

■ Agree ■ Strongly agree

Statement	Agree	Strongly agree	Total
The game itself was engaging	52%	43%	95%
I enjoyed the game itself	54%	33%	87%
I would be interested in playing this game again	46%	37%	83%
I found the virtual ad experience less intrusive than normal digital advertising	50%	24%	74%
The advertisement today was well integrated	39%	30%	69%
The game graphics were well done	59%	7%	66%
The game content was fresh and innovative	44%	11%	55%
I intend to recommend this game to family and friends	41%	13%	54%

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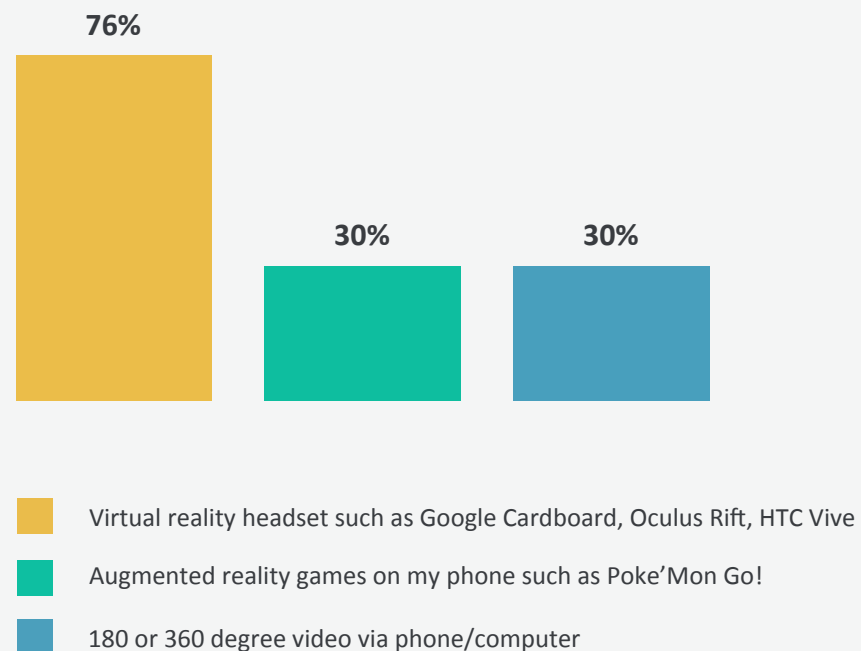
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PLANS TO USE IMMERSIVE TECH IN THE FUTURE

ALL RESPONDENTS PLAN ON USING IMMERSIVE TECH IN FUTURE, WITH VR HEADSETS LEADING IN POPULARITY

When Do You Plan to Use Immersive Tech Next?

- 13%
- 19%
- 31%
- 37%

Legend:
- Today
- Within the week
- Within the month
- More than a month in the future
- No future plans

Which Immersive Tech Do You Plan to Use Next?

- 76%
- 30%
- 30%

Legend:
- Virtual reality headset such as Google Cardboard, Oculus Rift, HTC Vive
- Augmented reality games on my phone such as Poke'Mon Go!
- 180 or 360 degree video via phone/computer

Q8: When do you plan on using immersive tech next? (e.g. watching a 180 or 360 degree video, playing a virtual game or augmented reality game such as Pokémon go)
Q9: Which immersive tech do you plan on using next? n=54

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Biometrics

ISOBAR MEASUREMENT
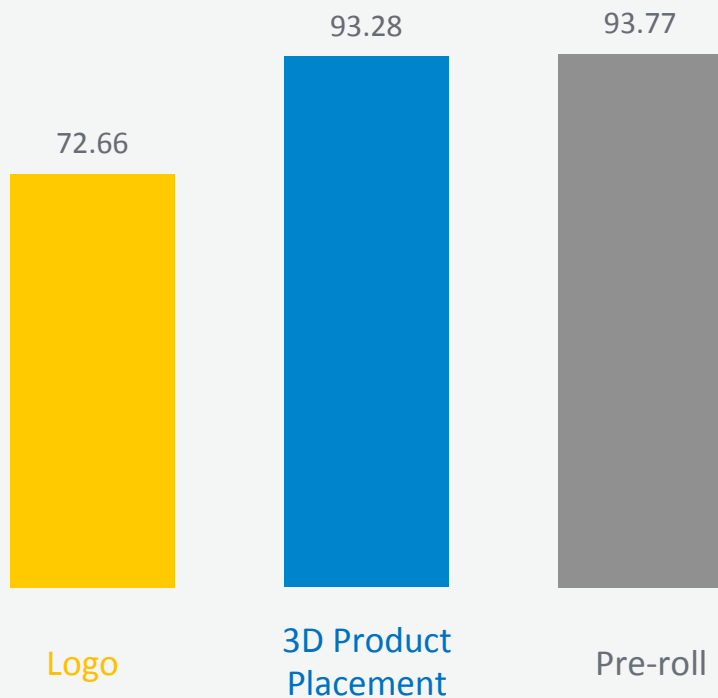## WHAT WAS MEASURED

WHAT WE MEASURE	EMOTIONAL AROUSAL	EMOTIONAL VALENCE
HOW WE MEASURE IT	Measuring skin conductance and heart rate variability as indicators of autonomic physiological arousal	Measuring EEG asymmetry and facial muscle contractions (EMG) as indicators of pleasant vs. unpleasant affect
WHY WE MEASURE IT	Insight into the features of the experience that are emotionally arousing, or not	Insight into the features of the experience that elicit positive or negative feelings

ISOBAR MEASUREMENT - AROUSAL
HEART RATE AND GSR

AROUSAL: HEART RATE
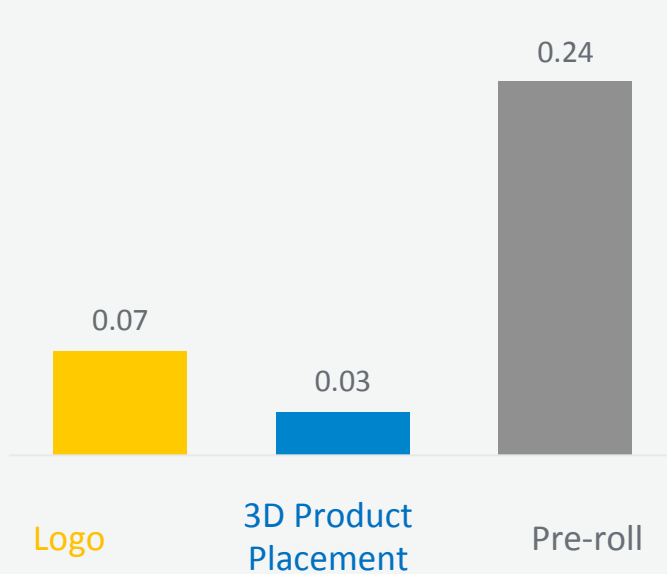
AROUSAL: GSR PEAKS PER MIN

	HEART RATE			GSR PEAKS PER MIN	
Logo	3D Product Placement	Pre-roll	Logo	3D Product Placement	Pre-roll
72.66	93.28	93.77	6	11.05	10.1

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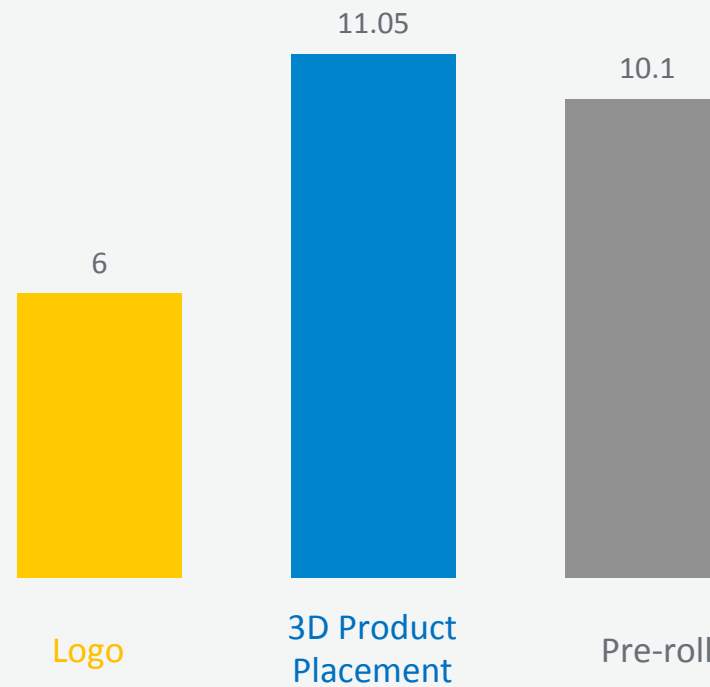
ISOBAR MEASUREMENT - VALENCE

HIGHER POSITIVE VALENCE IS ASSOCIATED WITH A POSITIVE EXPERIENCE

VALENCE: EEG ASYMMETRY

- Logo: 0.07
- 3D Product Placement: 0.03
- Pre-roll: 0.24

VALENCE: +/- FACIAL EXPRESSION

- Logo: BROW -2.55, SMILE 8.20
- 3D Product Placement: BROW -1.58, SMILE 11.34
- Pre-roll: BROW 0.11, SMILE 11.98
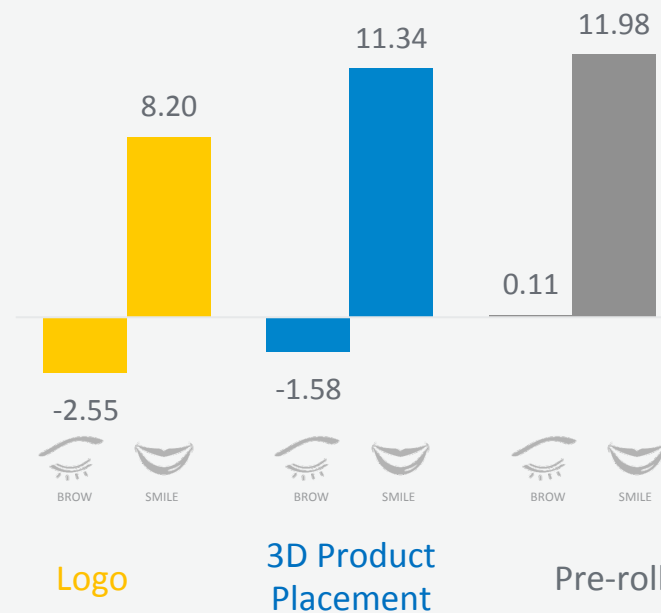
Key Findings

KEY FINDINGS

PRE-ROLL CAN BE USED EFFECTIVELY IN VIRTUAL ENVIRONMENTS

- In the VR environment, skin conductance measures show a level of emotional arousal 3 to 4 times higher than seen in 2D TV content.

- Of the three ad units tested, video is associated with the most positive valence, and relatively high arousal.

- Brand recall in VR gaming is high across all ad formats but only video maintains high ad recall the next day.

- Multiplayer VR games deliver high emotional engagement, but brands must be aware of ad placement to avoid being washed out in visually stimulating environment.
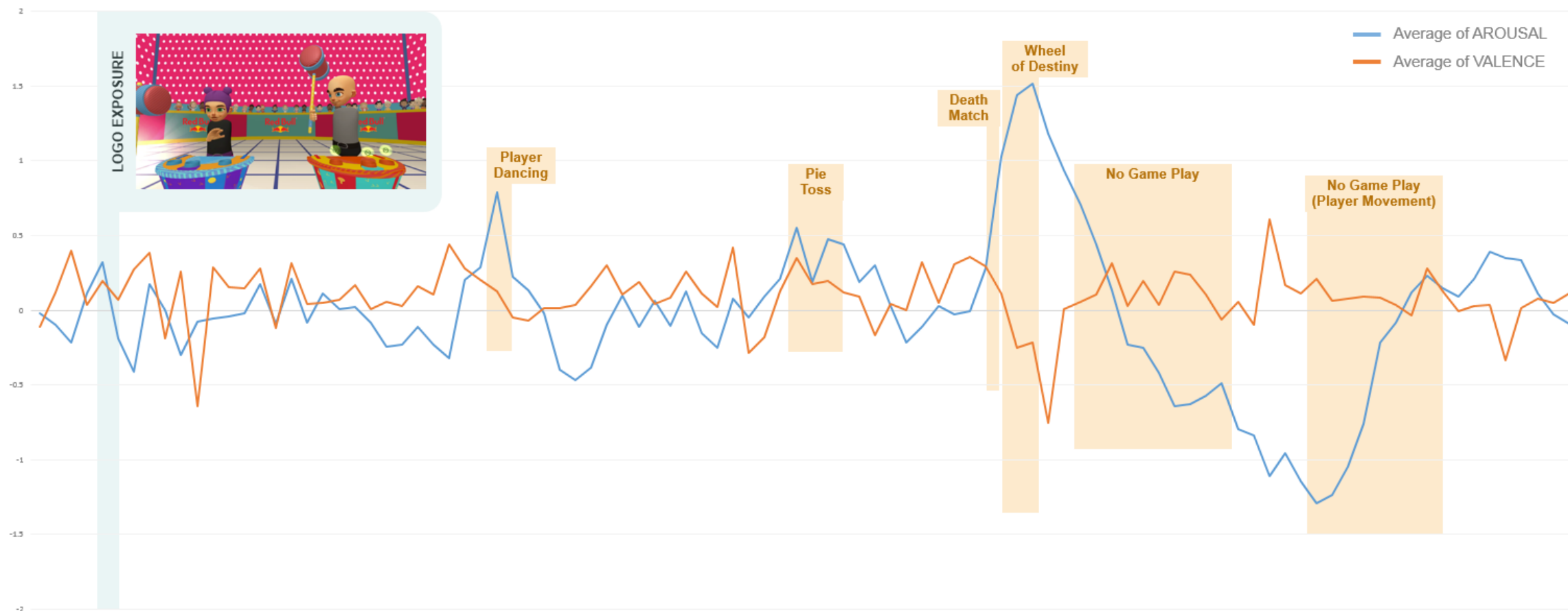
THANK YOU

Mireya Arteaga

yume.com/research

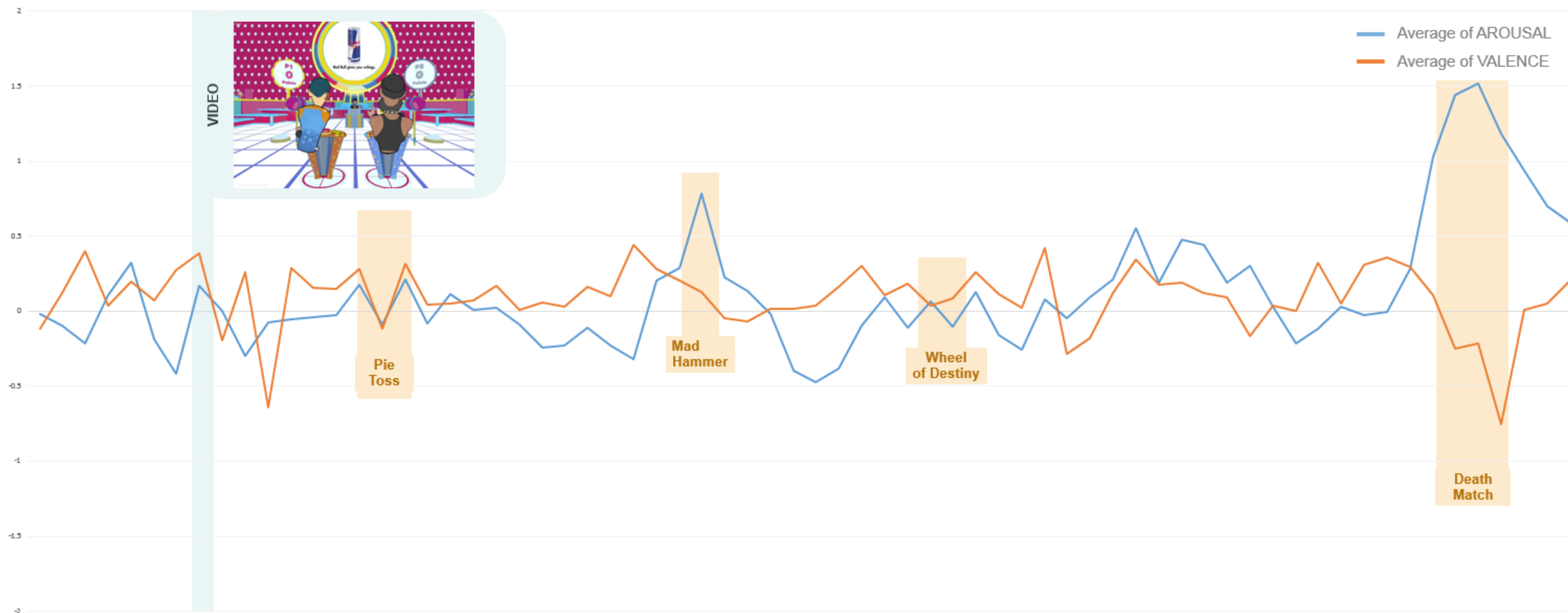research@yume.com

Appendix

AD UNIT DETAIL

LOGO WALLPAPER AD EXPERIENCE

AD UNIT DETAIL
PRE-ROLL AD

AD UNIT DETAIL

3D PRODUCT PLACEMENT