

The Psychology of Entertainment

How to use
Behavioural Science
for Better Player
Outcomes

September 2023

Photo: Reafon Gates





DAN THWAITES

CO-FOUNDER,

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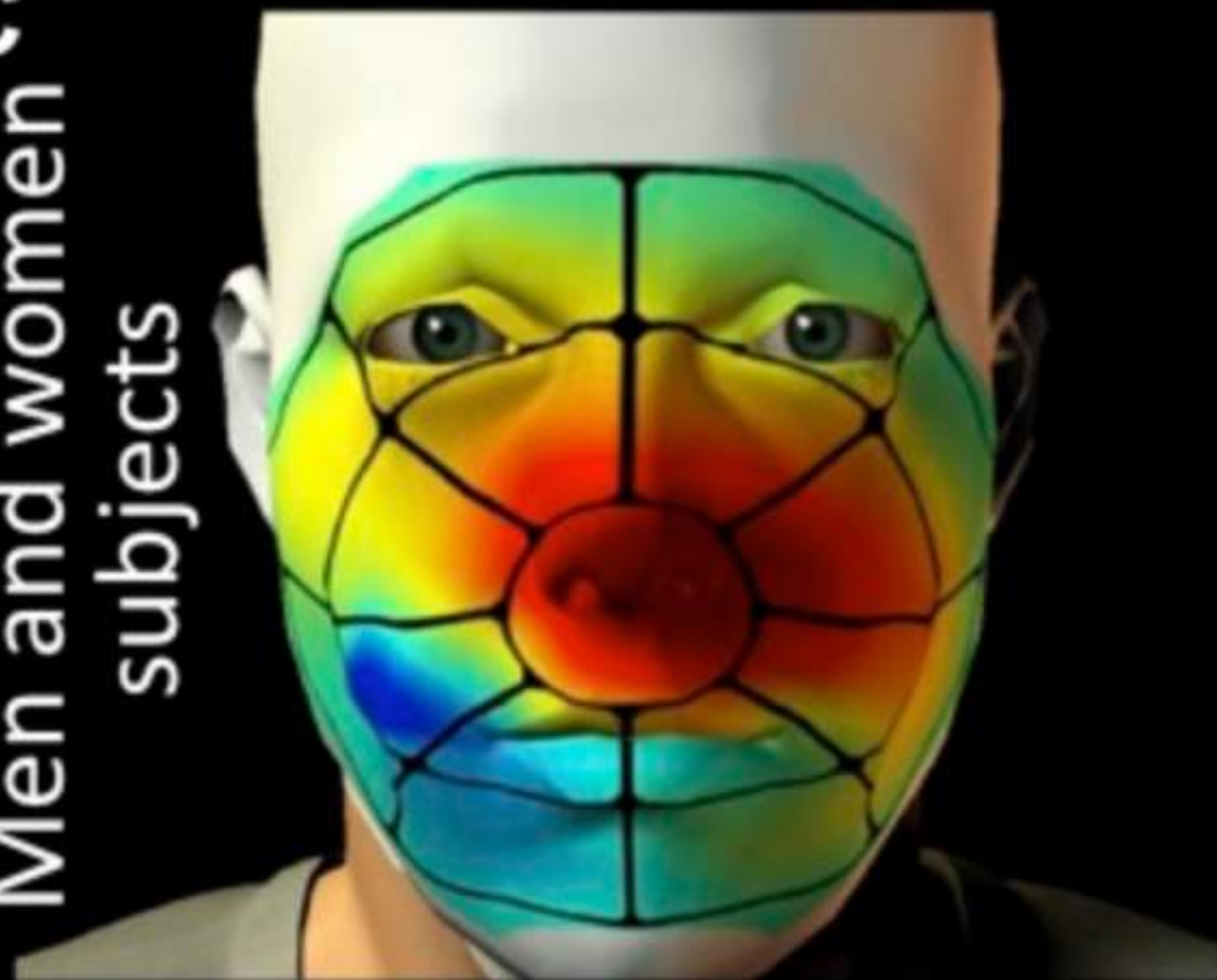
NewScientist



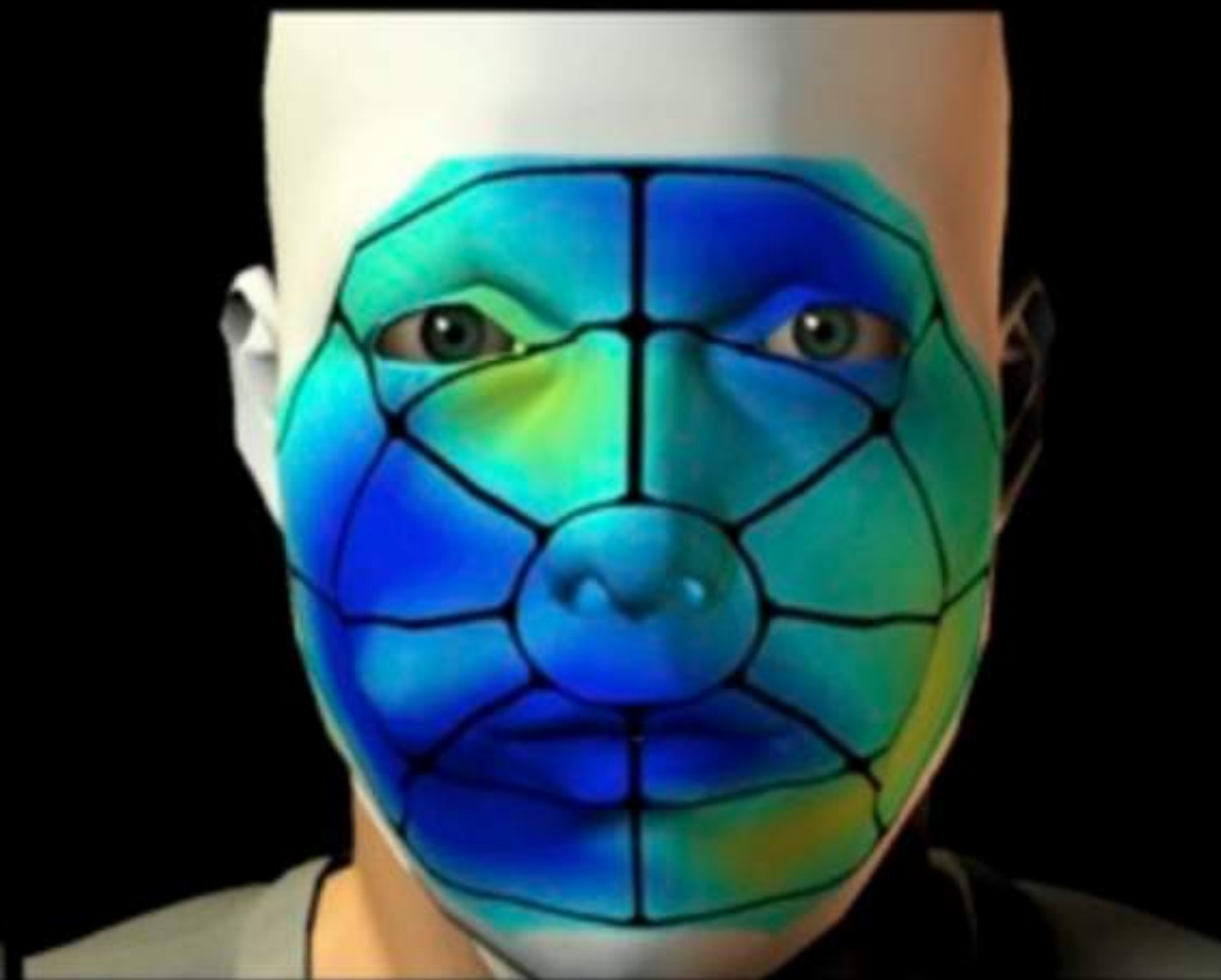
Some volunteers then shook hands...



Men and women
subjects

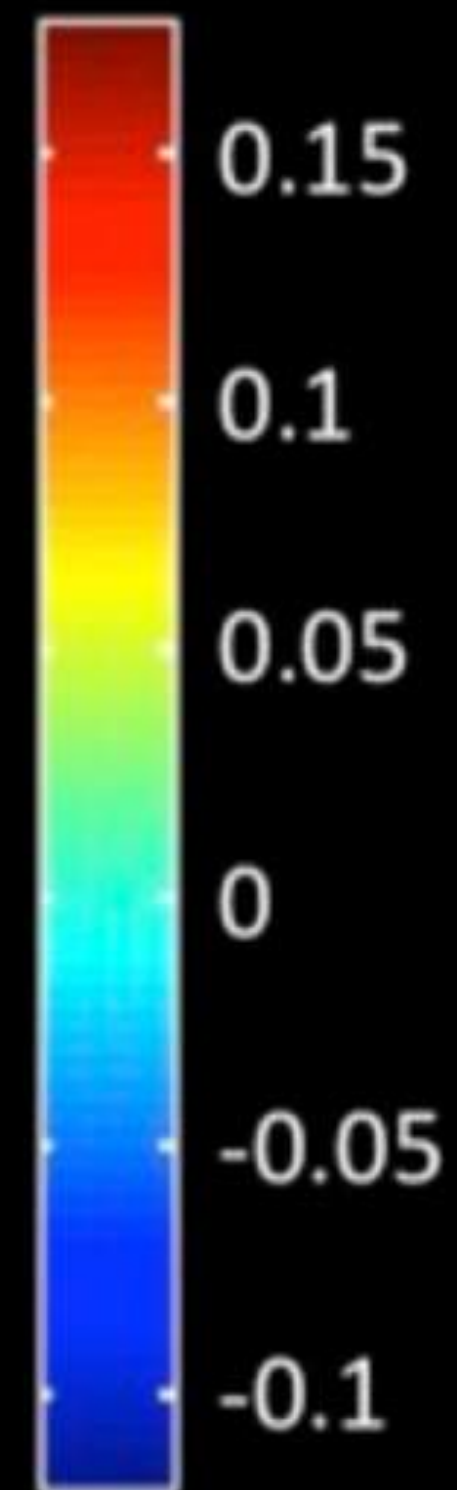


Handshake



No handshake

Fraction of cohort
post-greet change





Practically apply
psychology and data
for hard, commercial results



SCIENTIFIC THINKING FOR IRRATIONAL MINDS



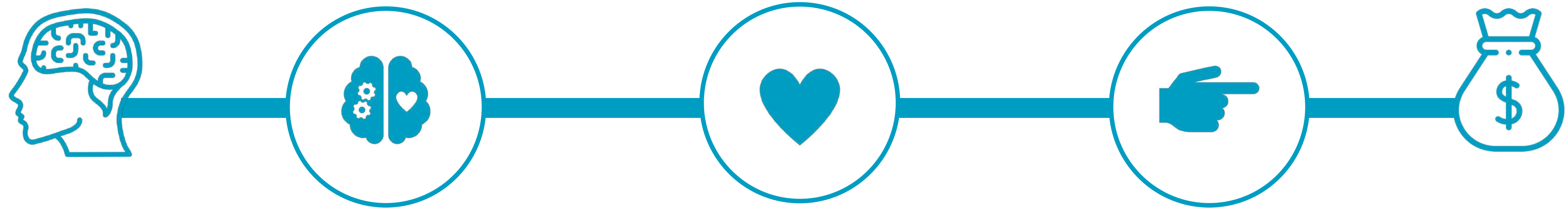
Make a more direct, scientific link
between minds and money.



To find opportunities that might otherwise be missed.
And show how to address them.



APPLY PSYCHOLOGY AND DATA TO GET HARD COMMERCIAL RESULTS



Reveal the hidden
psychology of how your
audiences really think

Be more persuasive, based
on how their mental
processes work

Develop nudges based
their psychological traits
to shift behaviour



PREVIOUS QUESTIONS



How do you use psychology to find [opportunities in sports betting](#)?



How do you persuade [people to pay for gaming](#)?



How can you [scientifically optimise player journeys](#) according to [psychological traits](#)?



How can behavioural science [optimise gaming apps](#)?



What is the psychology behind [Crypto and NFT ownership](#)?



How can price psychology [maintain premium pricing across channels](#) for a leisure brand?



How to identify risks of [dark flow](#) for better player protection?



How is [lottery play](#) [psychologically different](#) from other gaming offerings?



How do you make [non-alcoholic beer](#) cool around the world?

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/BLOG



Practical
Behavioural Nudges



Psychological
Profiles



The Science of
Attention



The Psychology of
Money





PSYCHOLOGY OF ENTERTAINMENT



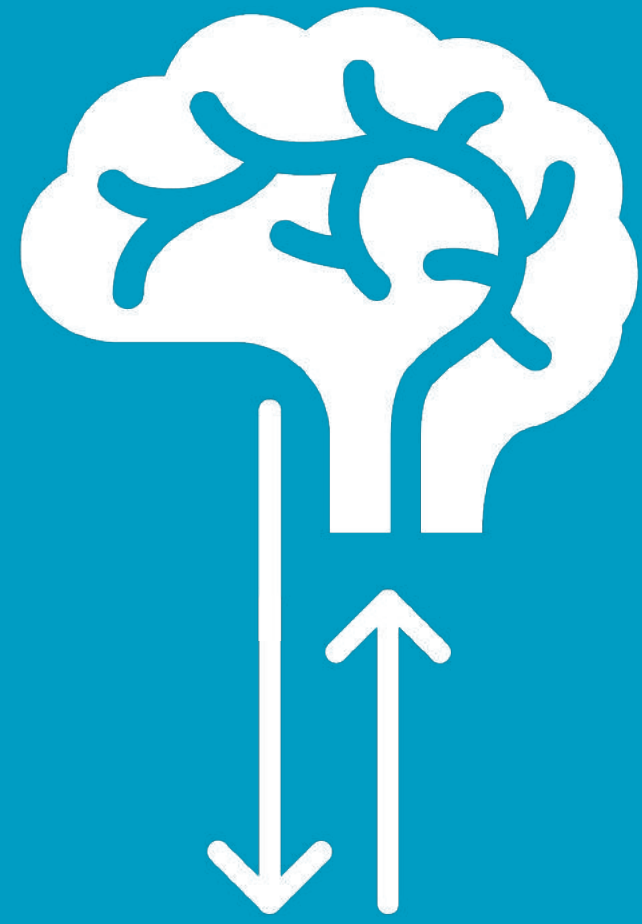






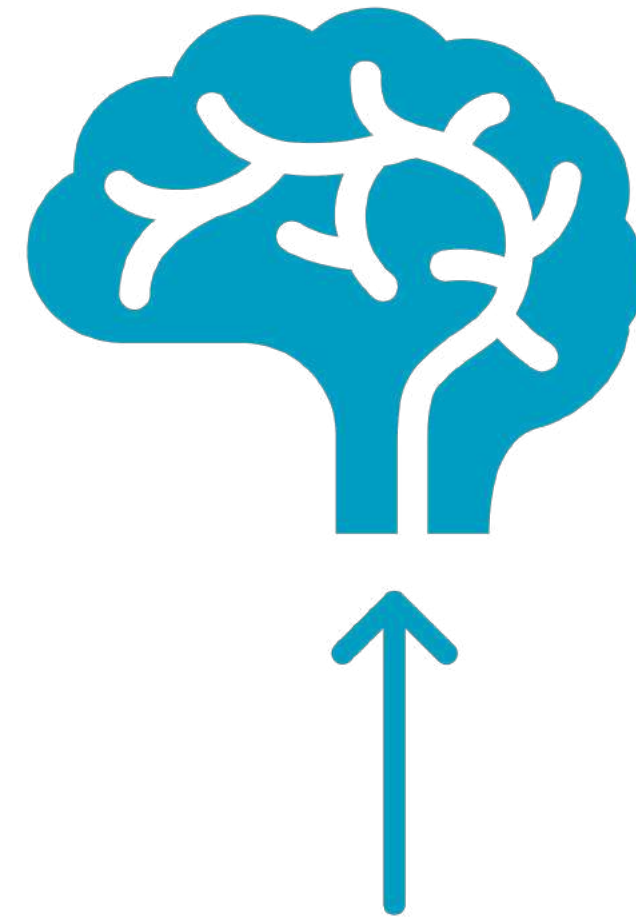
INTRINSIC /EXTRINSIC:
THE TWO SIDES
OF MOTIVATION





INTRINSIC / EXTRINSIC

TWO SIDES OF MOTIVATION



Extrinsic

- **External** causes - that can initiate and shape behaviour
- Usually associated with rewards and punishments



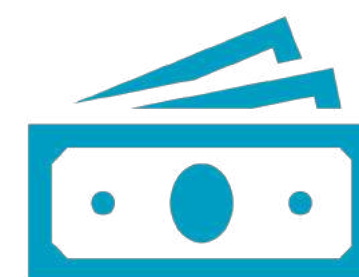
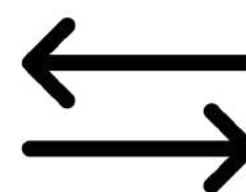
Intrinsic

- **Internal** - that has an end in itself
- For the **satisfaction inherent** in the behaviour itself



INTRINSIC / EXTRINSIC

TWO SIDES OF MOTIVATION



e.g. do you do your job for a **sense of satisfaction**

OR to get a **bonus / promoted**

(of course these are **not mutually exclusive**)



Often we see different **psychological segments** in gaming with different **balances** of these.

To be **good (or right, or better)**

vs

to get a **reward / recognition**



COMPETENCE





COMPETENCE

AND A SENSE OF CHALLENGE

People often like a [degree of challenge](#) before they get the reward.



Think of the [murder mystery](#), the psychological [thriller with a twist](#)



Or video games – with [varying difficulty](#)- set by the player, the type of game (or how it is played)

So they feel they've [demonstrated their ability](#).

Maybe even [improved](#) it.



COMPETENCE

AND A SENSE OF CHALLENGE

Take two other examples:



Watching TV



Reading a book

The reading perhaps requires **more cognitive effort**

Particularly if it's a **challenging** book

But the reader will only select their choice to the level that **they feel they can master** - whether that's our murder mystery or Ulysses

It needs to be **attainable**, at the level they want, with the amount of challenge they want.

If these criteria are not matched, then it will feel **unattainable and undesirable**.



AUTONOMY





AUTONOMY

A SENSE OF CONTROL

As individuals, we strive for a sense of **control** over **ourselves** and our **environment**.

Indeed, when we feel **out of control**, it creates **discomfort**, even **stress**.

And what that means to us will **vary according to our own psychological makeup**.

For example, moments of losing control when skiing down a steep mountain may be **energising and exciting** for one skier as they feel they can regain control; it will be very **appealing** for them.

The same situation will be **terrifying** for another. And to be avoided at all costs.



AUTONOMY

A SENSE OF CONTROL

Studies suggest that the [gratification](#) that comes from [choosing to partake in entertainment](#) satisfies our need for [autonomy](#).

Having a [wide range of entertainment](#) choices available, further satisfy this need.

And even though entertainment choices are [often influenced by others](#), people tend to [underestimate the impact of others](#) on their choices.

The sense of [making a choice](#) still makes them feel that [they have control](#).



RELATEDNESS





RELATEDNESS

IN TOUCH WITH ANOTHER

This is the need to feel in touch with someone else.

Various studies show that television especially meets this need.

Even if someone is alone.

Research has shown viewers / players form a sense of connection to characters on TV shows, movies, even video games.

This is called “para social” interaction.

It also explains why celebrities or known characters build the appeal of entertainment products.



LEARNING





LEARNING

RELATED TO ALL THE PREVIOUS
THEMES

Related to all of the above, is the [act of learning](#).

From early childhood, certain games (e.g. escaping the monster) involve [creating a make-believe scenario](#) that are “optimised...for skill acquisition”.

This gives us a sense of [autonomy and competence](#) over elements that would [not be possible in real life](#).

For example, in children (and animals), the game of “chase” provides sets of skills which could be used in “[high stakes encounters](#)”.

So, we see the appeal that comes from [simulating situations that could not happen in real life](#).



REAL AND
NOT REAL





REAL AND NOT REAL

RELATED TO ALL THE PREVIOUS
THEMES

Other studies suggest there is a “dualistic” nature to entertainment.

We know it’s not real, but we like - to a degree - the fact that parts of it feel real.

The horror movie that we watch whilst safely in our houses.

Technology (e.g. VR) allows experiences to become more “real” and so provide more opportunities for entertainment

But also the need for appropriate reassurance that it’s not real and the player is in control (autonomy)





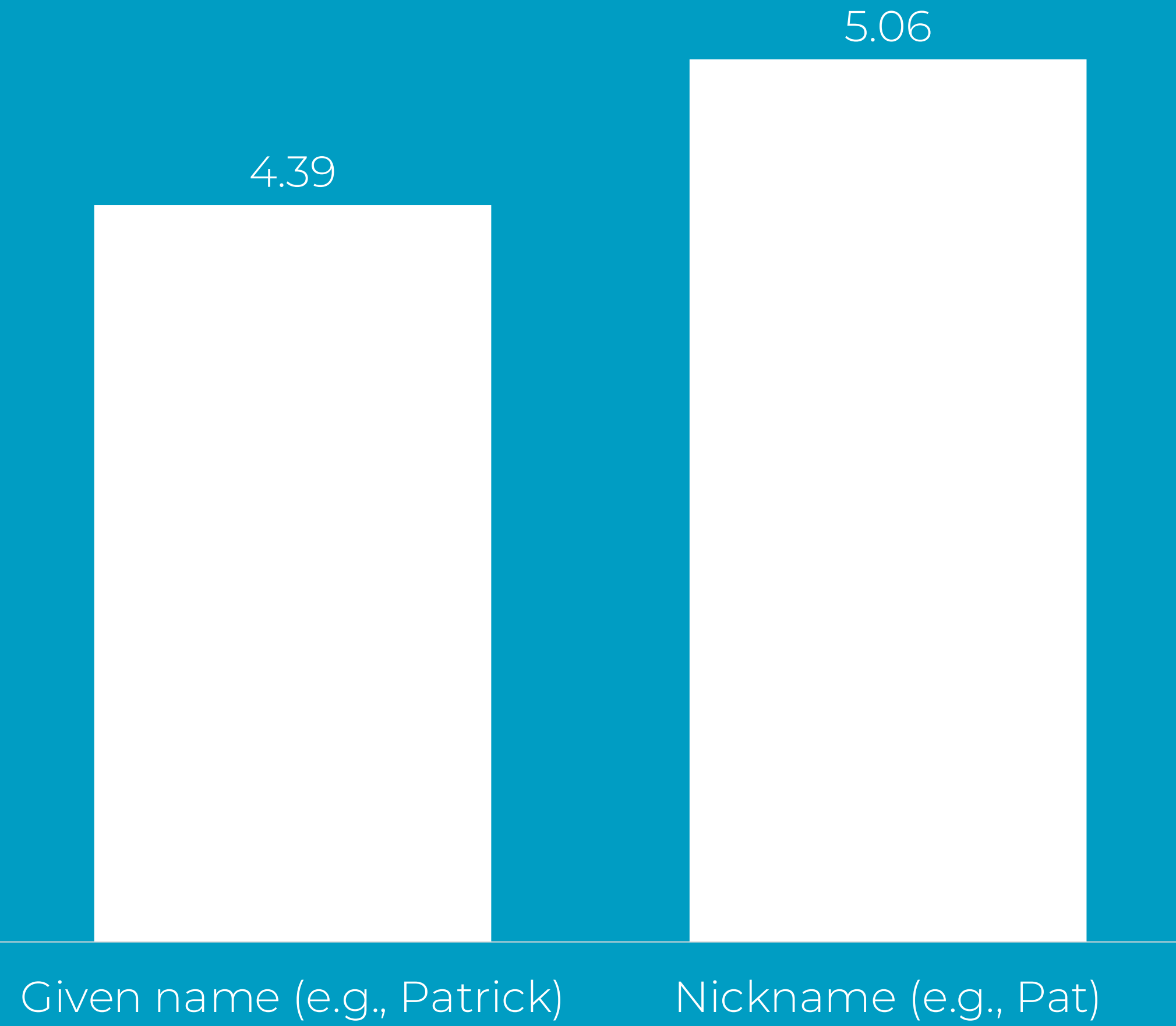
PATRICK FAGAN

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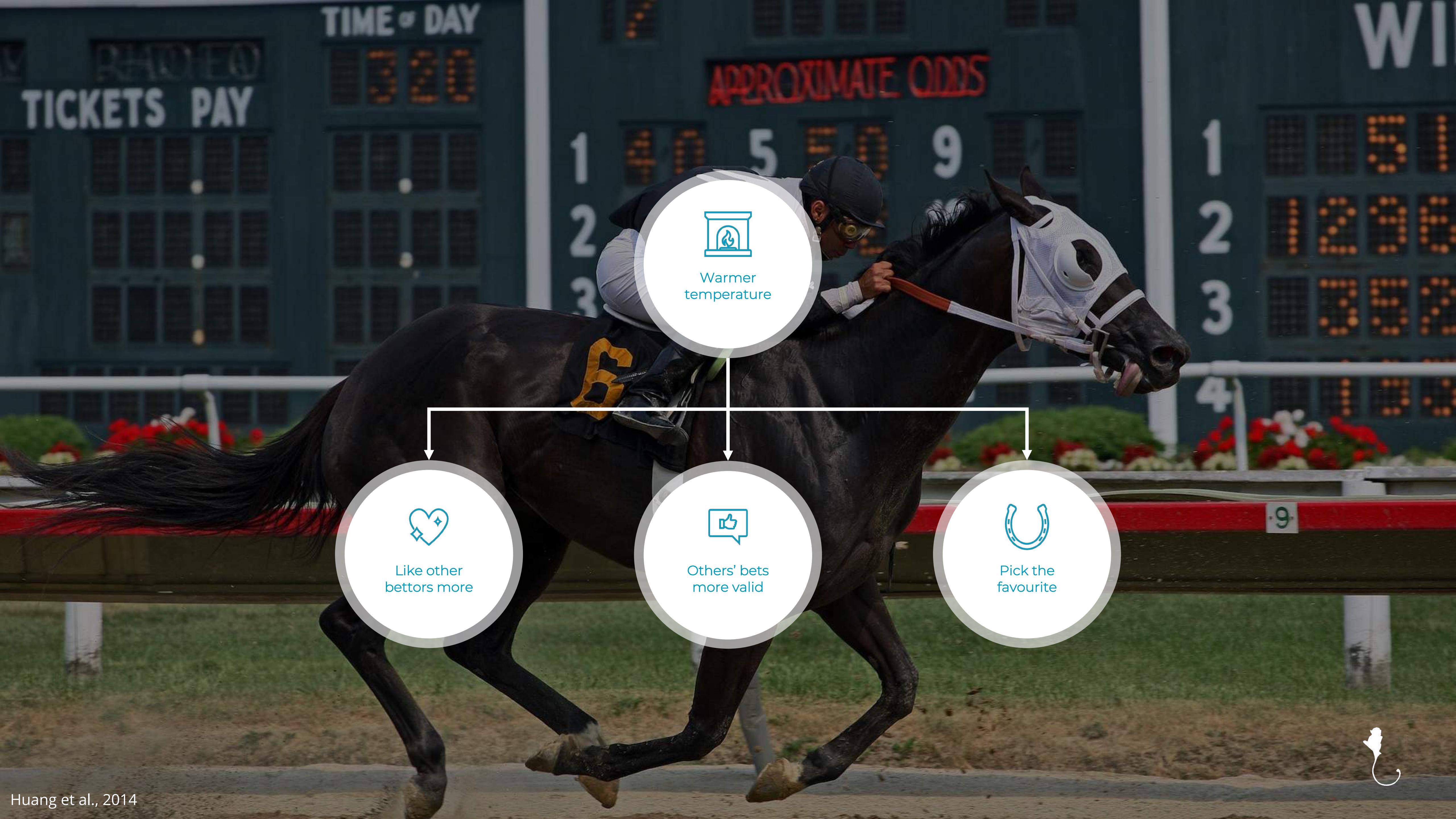


Rating of Cheerfulness



Rated as more intelligent,
industrious and honest





Warmer temperature



Like other bettors more

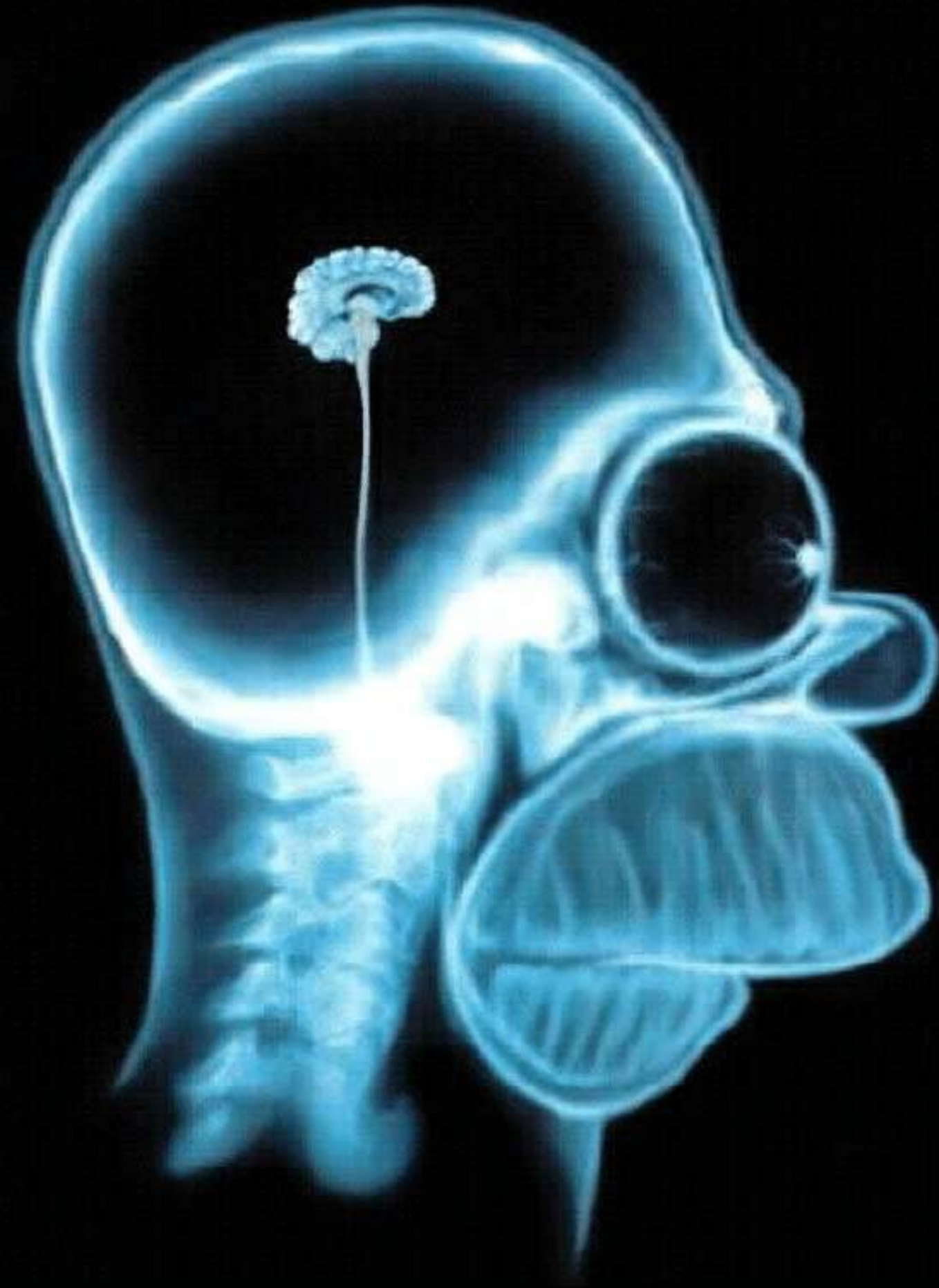


Others' bets more valid



Pick the favourite

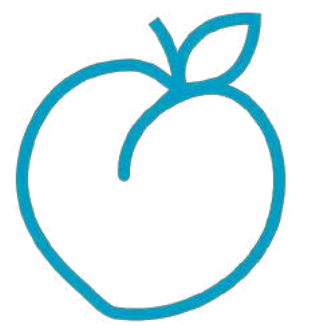




0.0004%



Chose Cake

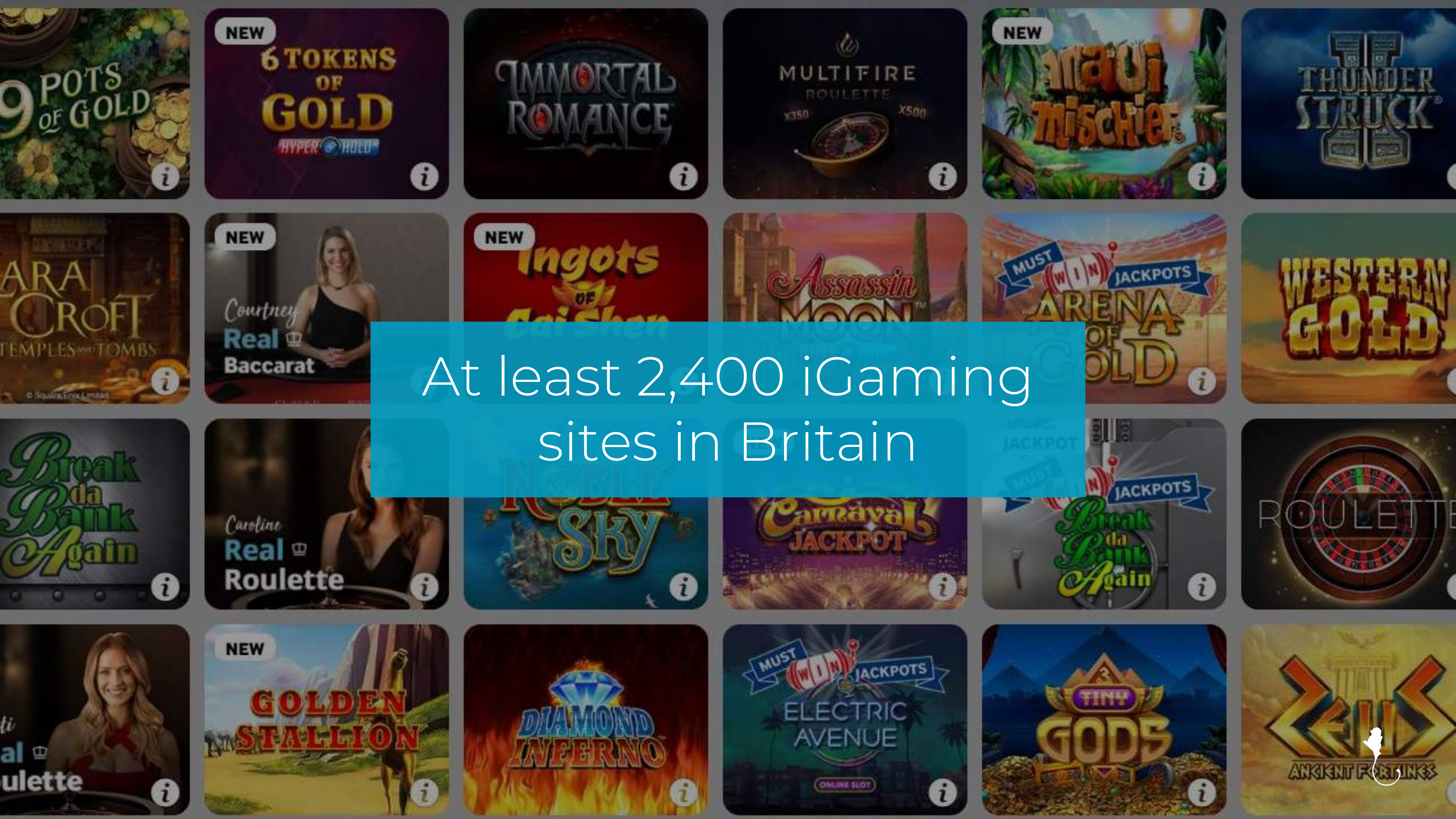


Chose Fruit

2-digit #
(e.g., 62)

7-digit # (e.g.,
4811505)





At least 2,400 iGaming sites in Britain



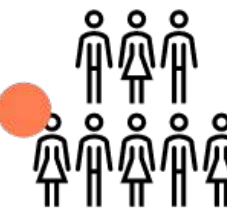
Commitment
Make people feel invested so they are more likely to follow through

Scarcity
Make the resource feel scarce so people feel an urgency to obtain it

Authority
Use a credible or liked messenger so people accept the message



You have reached the top of the queue and are a priority for getting a free NHS COVID-19 vaccine. Please book yours now at <https://www.nhs.uk/covid-vaccination> or by calling 119.



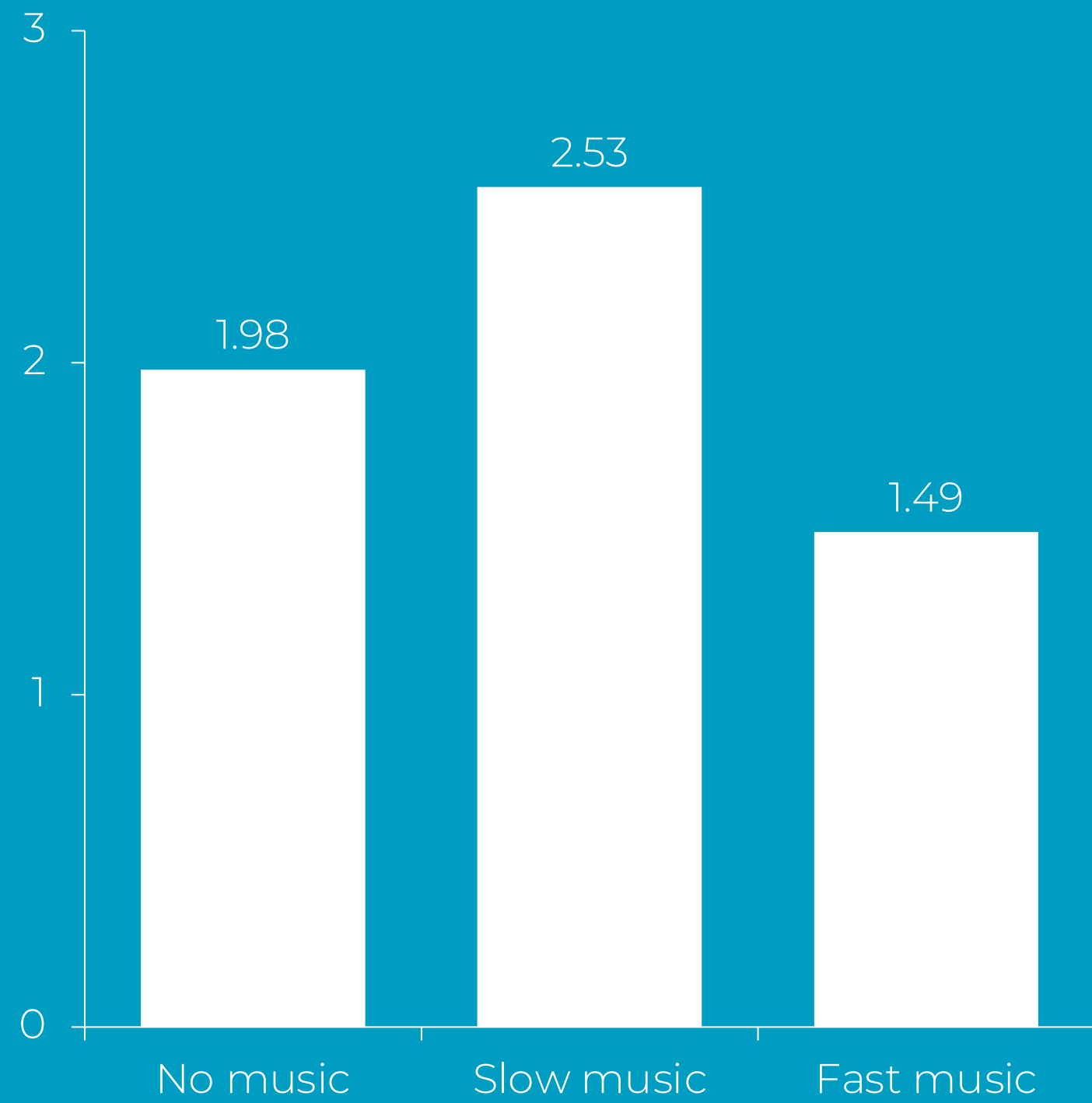
Ego
Motivate behaviour by tapping into the need for social status

Social Proof
Make the behaviour seem popular so people assume it must be good

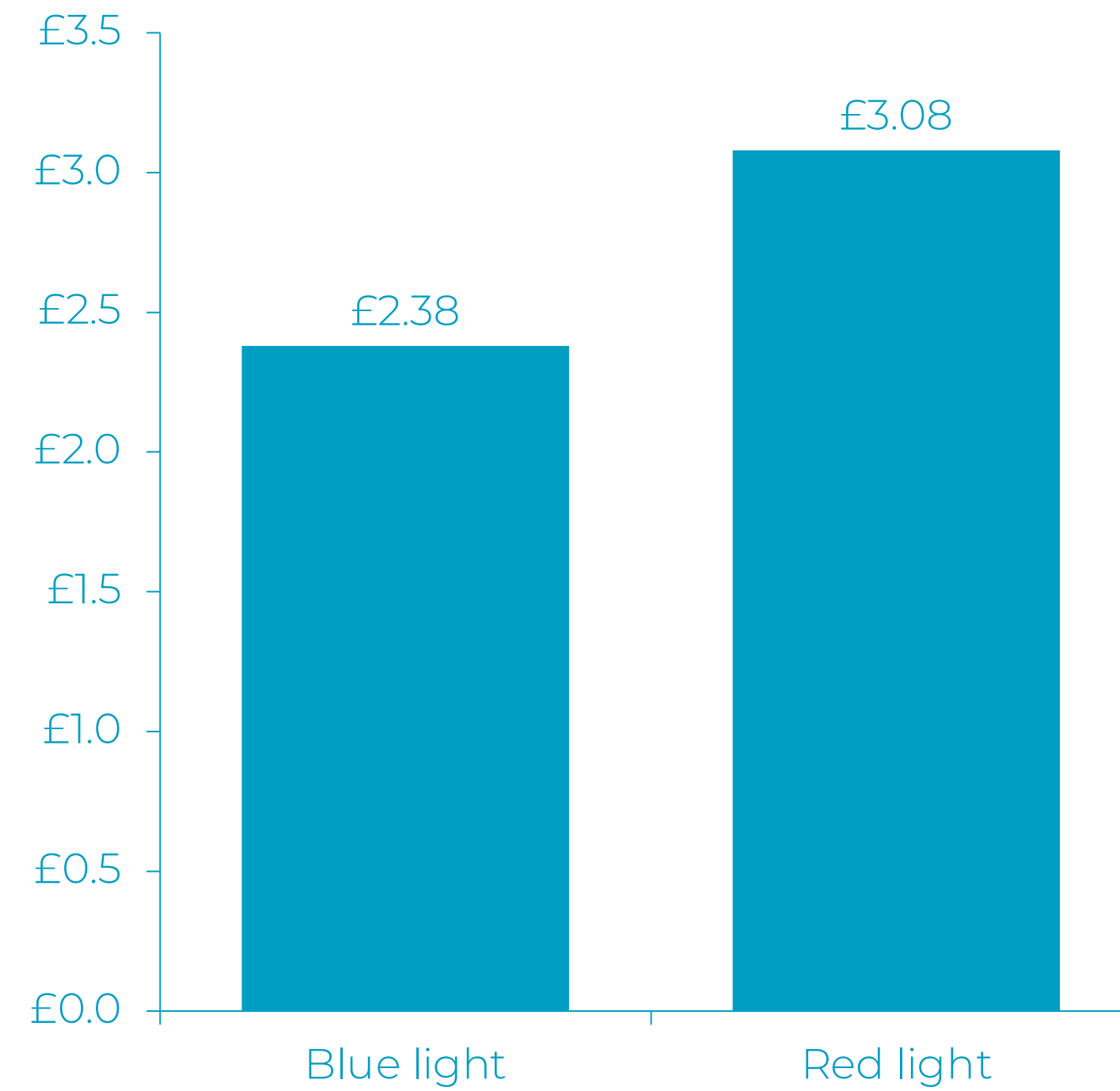
Reciprocity
Make people feel indebted so they are more likely to comply



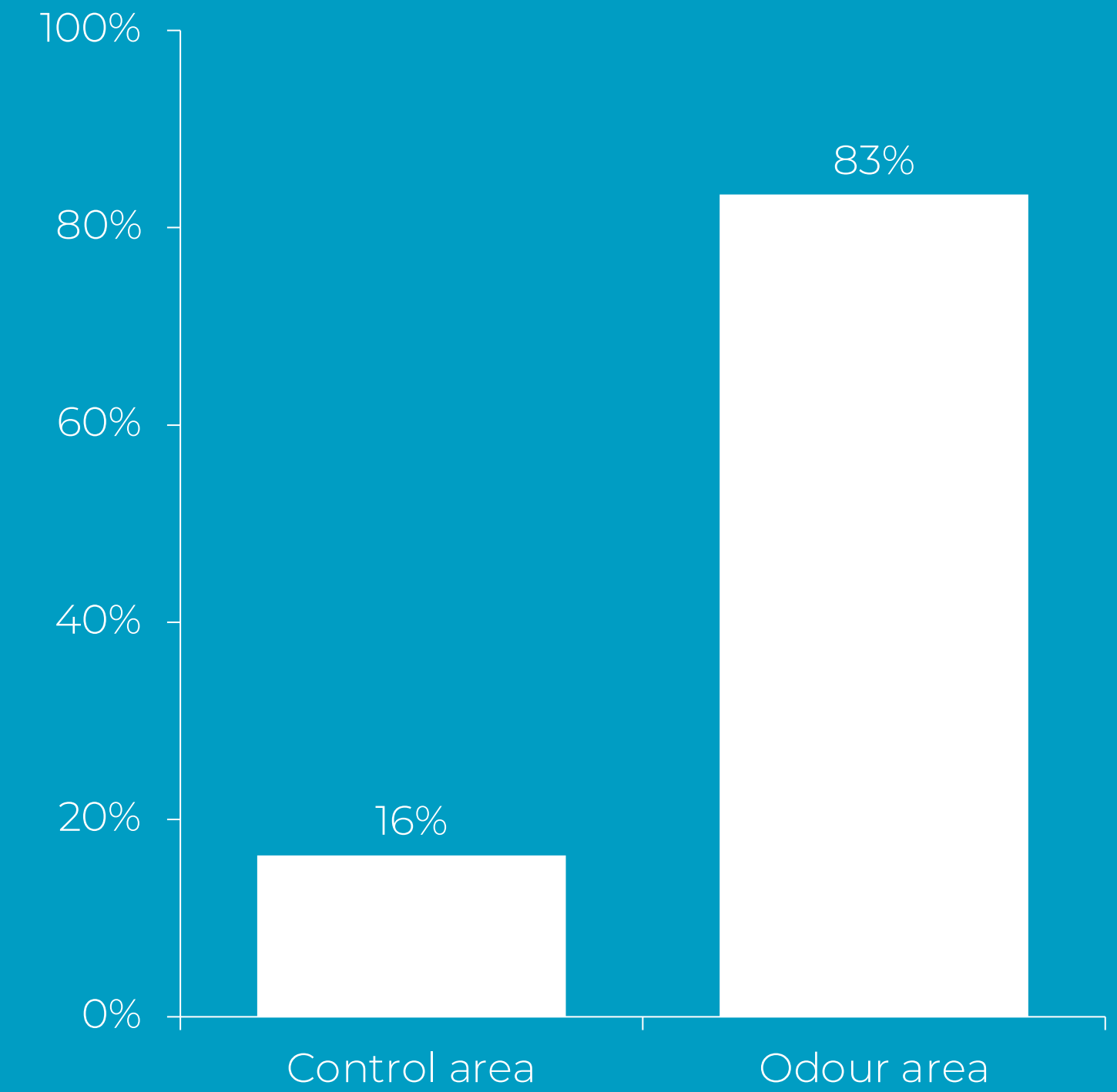
Relative Time Taken to Place
Roulette Bet



Average Bet Size on Three-Card
Brag



Change in Spend on Slot
Machines vs. Prior Weekend



Implementation Intentions



BETTING ON THE FOOTBALL?

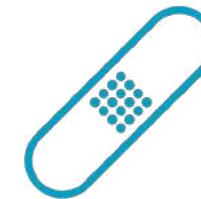
SET YOUR LIMITS AT THE START

ONLY BET WHAT YOU CAN AFFORD



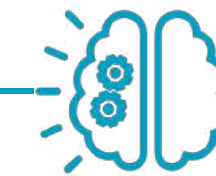
Anchoring

Loss Aversion



NEVER CHASE YOUR LOSSES

DON'T BET IF YOU'RE GETTING ANGRY



Cold state

Relatedness



NEVER PUT BETTING BEFORE YOUR MATES

WHEN THE **FUN** STOPS **STOP**

gambleaware.co.uk



18+

“There were no credible differences between the gambling message condition and the control condition, with the largest effect being a 5.87% increase in the probability of betting everything in the gambling message condition.”



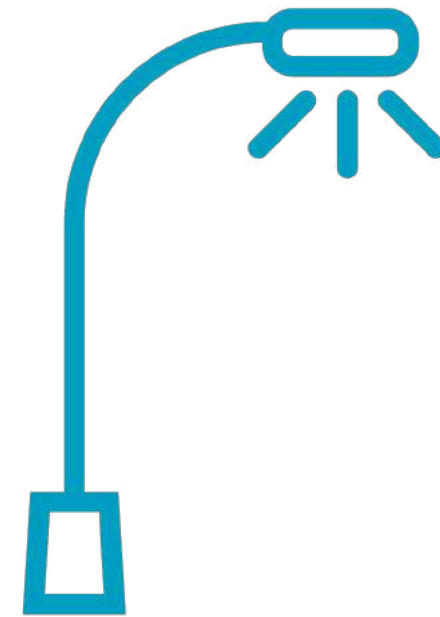
DISCLAIMERS CAN BE OPTIMISED



FRAMING

People respond more sensitively to information framed as a loss.

But 100% of operators used a return-to-player label (e.g., 97% returned) rather than a house-edge label (e.g., 3% kept).



AVAILABILITY

People tend to act on information that is front of mind.

But gamblers had to click an average of 1.28 times to navigate away from the game .to find the statement



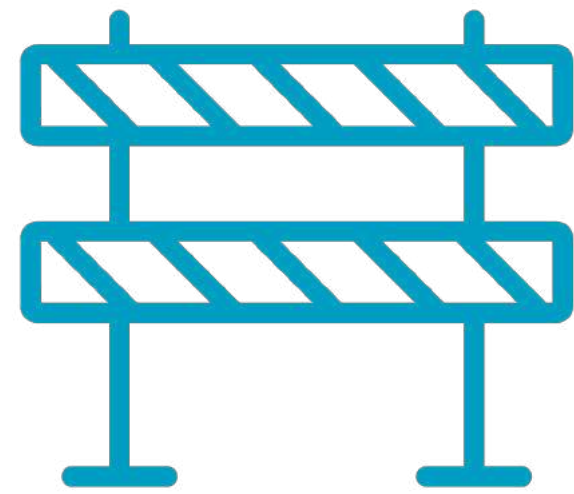
FLUENCY

People act on information that is concrete and simple.

But there were an average of 2,078 words and 96% used the smallest font size; 17% only ever used an acronym (e.g., RTP).



AND SAFER PLAY NUDGES CAN BE IMPLEMENTED



FRICTION

People are less likely to act if it is more effortful to do so.

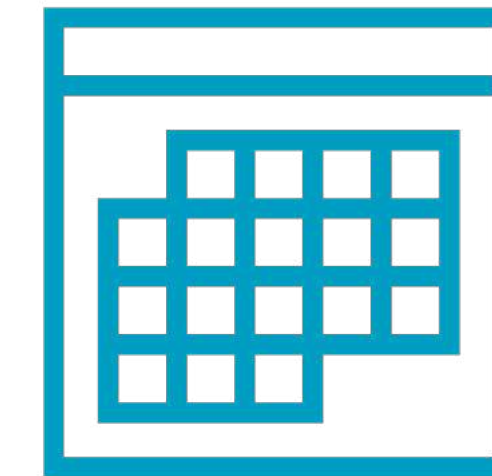
Make it harder to bet (easier to withdraw). Interrupt 'flow' – a good intervention was banning smoking, as people took breaks.



DEFAULTS

People tend to go whatever the default option is.

Set a conservative default deposit limit, for example. In a large-scale study, less than 1% of players exceeded the limit set.



PRESENT BIAS

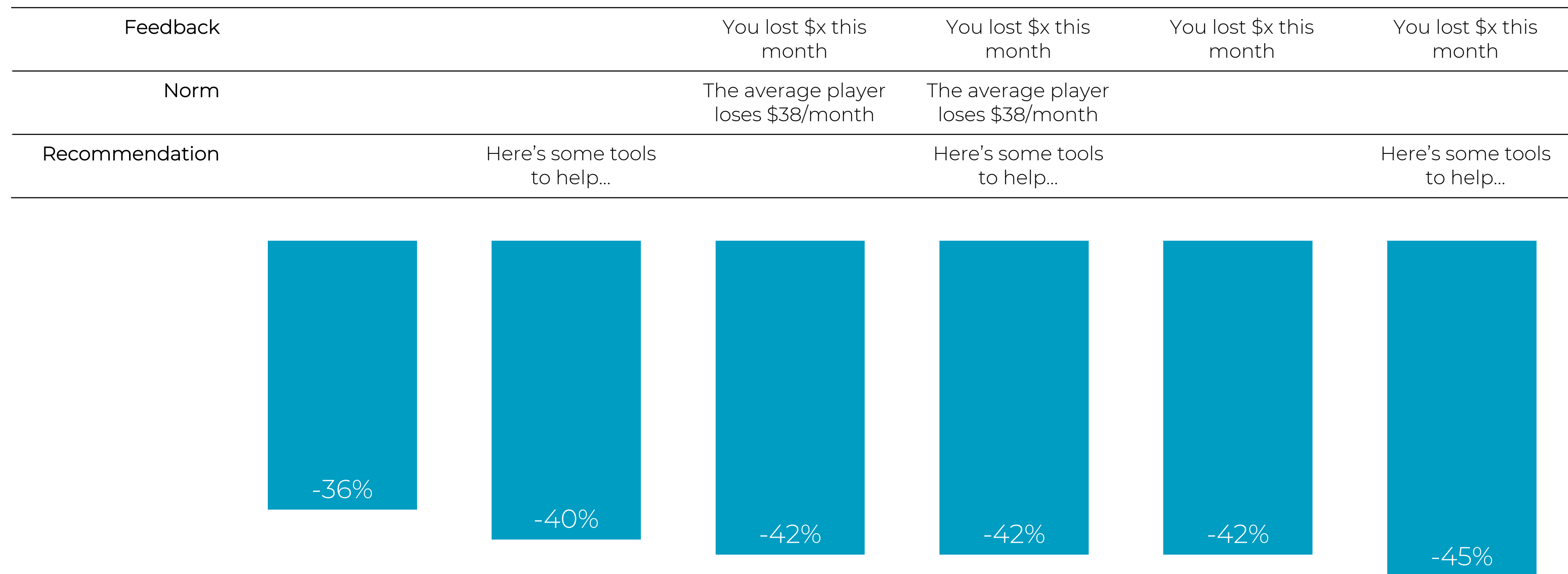
People are more influenced by the present than the future.

Encourage people to set commitments and plans for themselves. Have them imagine what future losses would feel like.

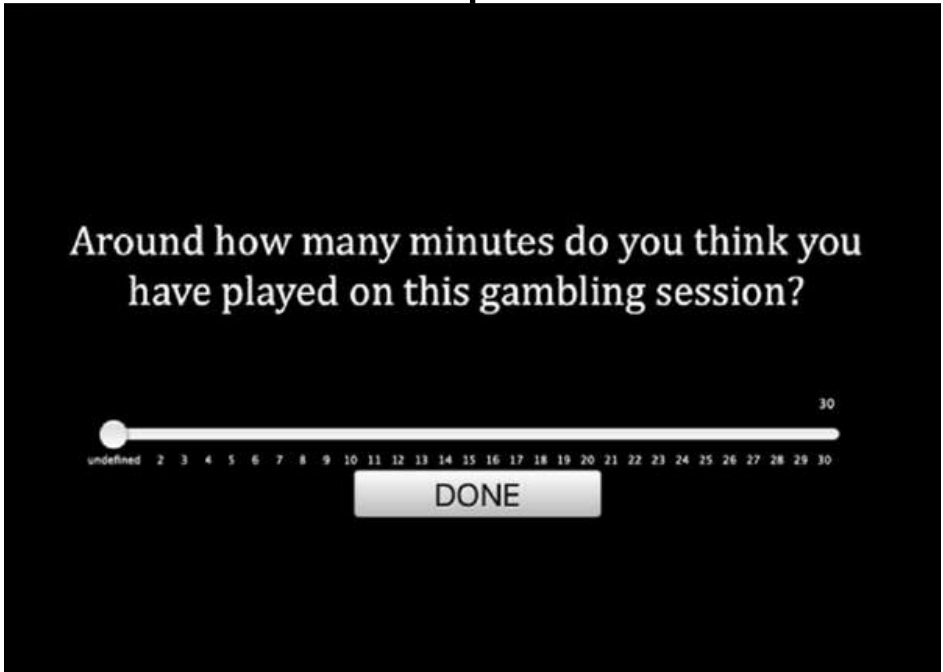
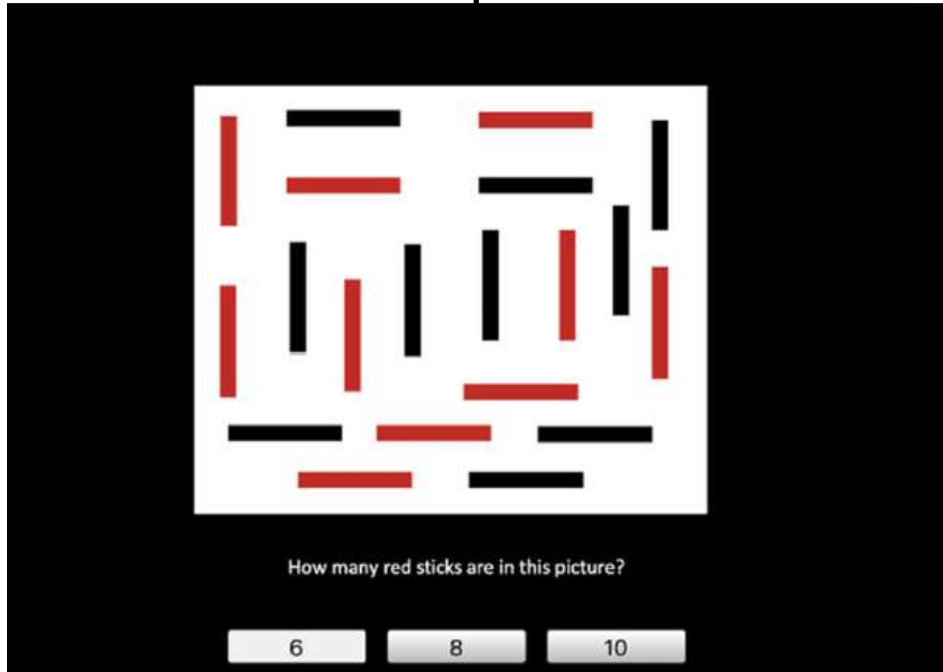
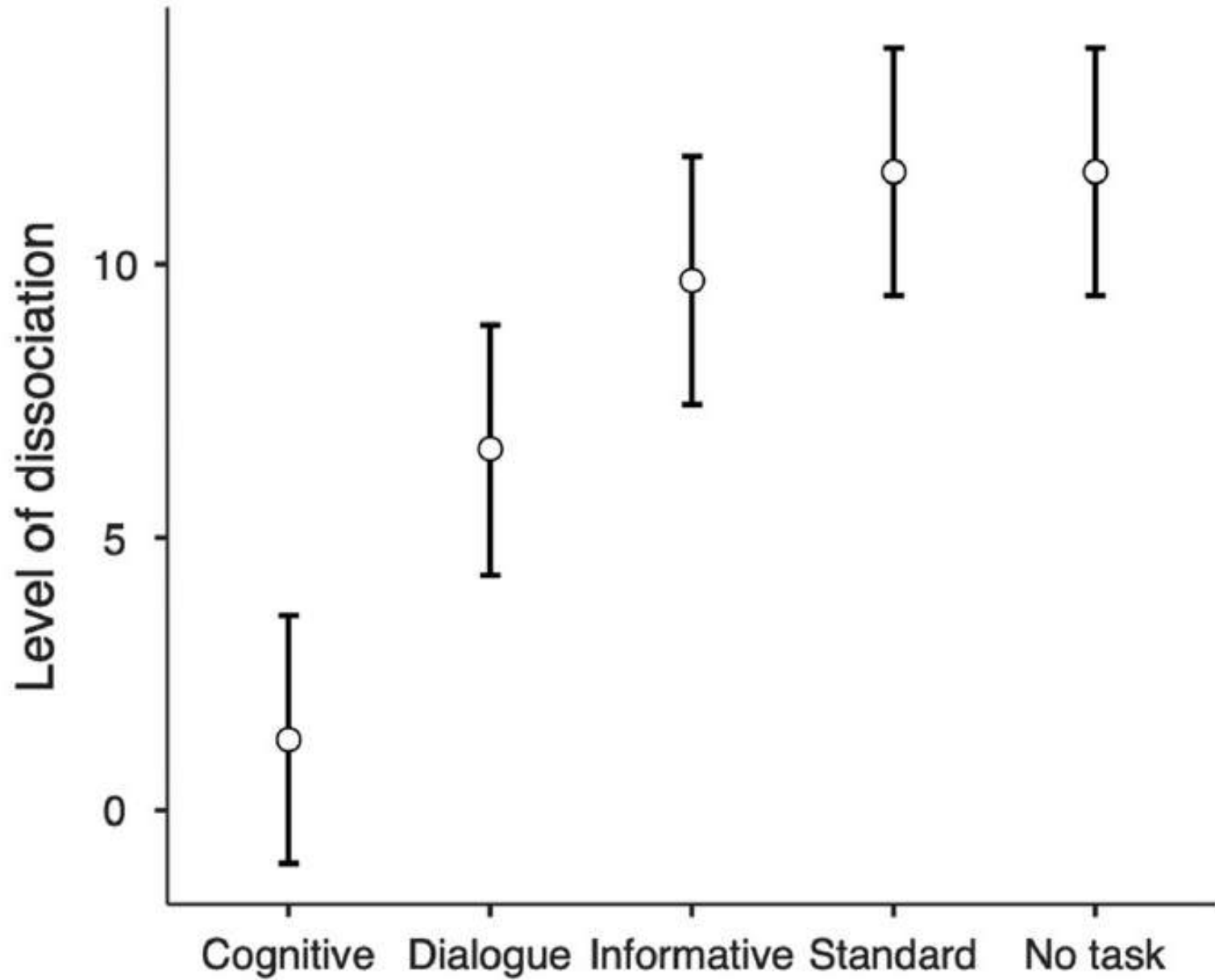


THESE NUDGES HAVE BEEN PROVEN TO WORK

Seven-day median change in theoretical losses



COLD STATES REDUCE 'DARK FLOW'





TAKE TIME TO THINK™

taketimetothink.co.uk

BeGambleAware.org[®]

18+



BUT NUDGES ARE NOT ONE-SIZE-FITS-ALL

the trusted way to borrow cash

25 September 2003

Account Number

BUSINESS HOURS
MON - FRI 08:30 - 16:30
SAT 08:00 - 12:00

A low rate for you.

Congratulations! You are now eligible for a special interest rate on a cash loan from (). This is a limited time offer, so please come in by 31 October 2003.

You can use this cash to pay off a more expensive debt, or for anything else you want.

Enjoy low monthly repayments with this offer! For example:

Interest Rate	Loan Amount	Loan Term	Monthly Repayment
3.99%	R500	4 Months	R144.95
3.99%	R1000	4 Months	R289.90
3.99%	R2000	4 Months	R579.80
3.99%	R4000	4 Months	R1159.60

LOAN AVAILABILITY SUBJECT TO TERMS & CONDITIONS


Loans available in other amounts. There are no hidden costs. What you see is what you pay.

If you borrow from us you will pay R840.40 less in total on a R1000.00, 4 month loan.

How to apply:
Bring your ID book and latest payslip to your usual branch, by **31 October 2003** and ask for I

Customer Consultant

P.S. Unfortunately, if you have already taken a loan since the date this letter was issued, you do not qualify for this offer. Comparison based on a competitor's interest rate of 25%.



the trusted way to borrow cash

25 September 2003

Account Number

BUSINESS HOURS
MON - FRI 08:30 - 16:30
SAT 08:00 - 12:00

A special rate for you.

Dear ,

Congratulations! You are now eligible for a special interest rate on a cash loan from (). This is a limited time offer, so please come in by 31 October 2003.

You can use this cash to pay off a more expensive debt, or for anything else you want.

Enjoy low monthly repayments with this offer! Here is one example of a loan you can get under this offer:

Loan Amount	Loan Term	Monthly Repayment
R1000.00	4 Months	R379.90


LOAN AVAILABILITY SUBJECT TO TERMS & CONDITIONS

Loans available in other amounts. There are no hidden costs. What you see is what you pay.

How to apply:
Bring your ID book and latest payslip to your usual branch, by **31 October 2003** and ask for

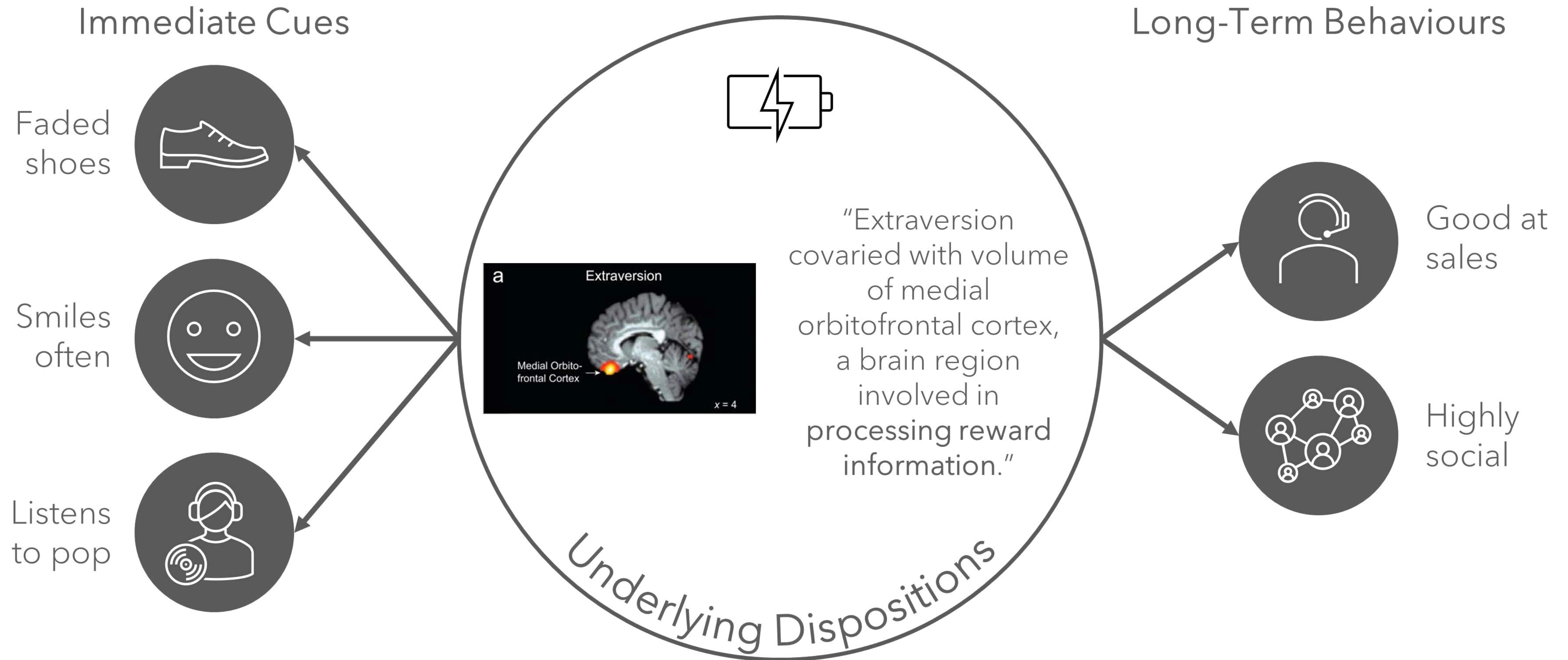
Customer Consultant

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UNDERLYING TRAITS DETERMINE BEHAVIOUR

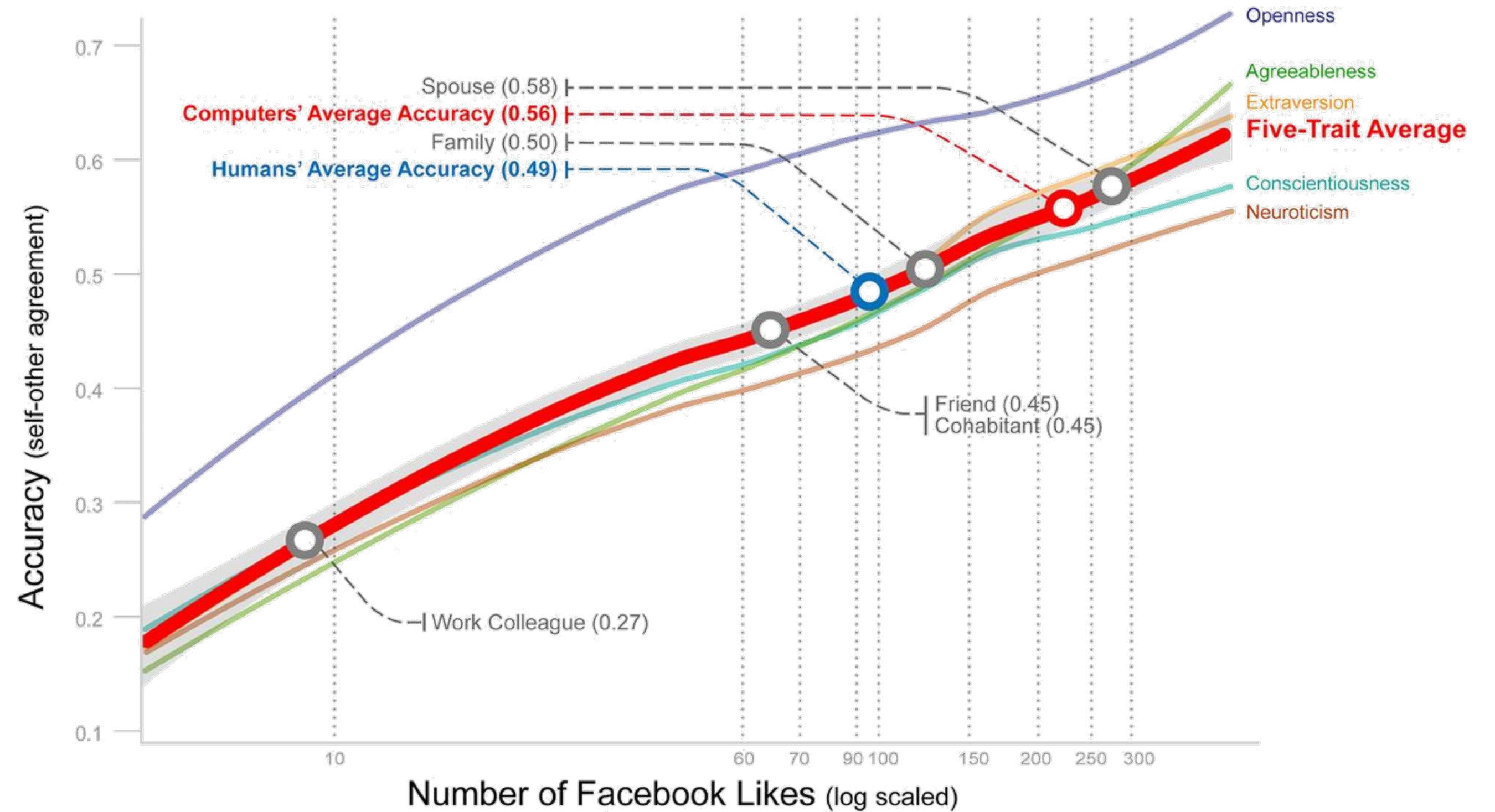


WE CAN READ PEOPLE FROM THEIR DATA

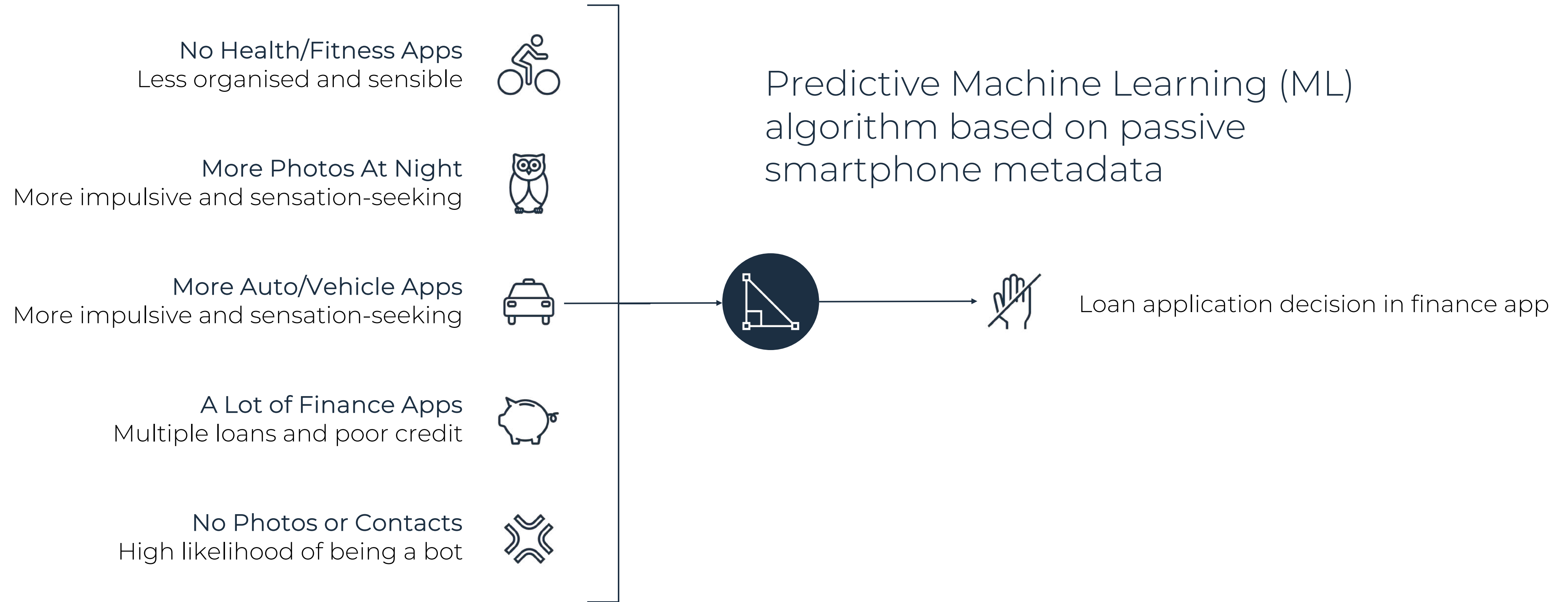
TABLE 1
TAG CLUSTERS MOST CORRELATED WITH PERSONALITY

<i>r</i>					<i>r</i>	
*** -0.17	horror-and-gothic	Introverted	Extraversion	Extraverted	relationships	0.25 ***
** -0.16	fantasy-sci-fiction				chick-lits	0.17 ***
** -0.15	parallel-world				memoir-autobio	0.17 ***
** -0.14	other-supernatural				celebrity-romance	0.14 **
** -0.13	manga-collection				african-american-lit	0.13 **
*** -0.17	italian-renaissance	Disagreeable	Agreeableness	Agreeable	christian-classics	0.24 ***
** -0.15	cult-classics				relationships	0.20 ***
** -0.15	psychological-drama				family-drama	0.15 **
* -0.12	scary-stuff				kids-book	0.13 **
* -0.11	japanese-culture				buddhism	0.12 *
*** -0.26	light-fantasy	Traditional	Openness	Open	back-burner	0.28 ***
*** -0.19	grade-4-6				philosophical-novel	0.25 ***
*** -0.17	indian-books				university-readings	0.24 ***
*** -0.17	chick-lits				classic-favs	0.19 ***
* -0.11	christian-classics				plays-and-musicals	0.14 **
*** -0.24	theology-religion	Levelheaded	Neuroticism	Neurotic	mental-issues	0.25 ***
*** -0.22	politics-and-philosophy				pretty-writing	0.24 ***
*** -0.20	professional-reading				sad-endings	0.20 ***
*** -0.19	leadership-business				paranormal-fantasy-scifi	0.17 ***
*** -0.16	science-and-technology				dark-and-dangerous	0.15 **
** -0.16	modern-fantasy	Tardy	Conscientiousness	Conscientious	grown-up-stuff	0.23 ***
** -0.13	graphica				brain-food	0.23 ***
** -0.13	teenage-books				history-ww2	0.21 ***
* -0.12	fantasy-sci-fiction				professional-reading	0.19 ***
* -0.11	humor-comedy				leadership-business	0.18 ***

r = correlation coefficient; * *p* < 0.05; ** *p* < 0.01; *** *p* < 0.001.



...USE IT TO MAKE PREDICTIONS



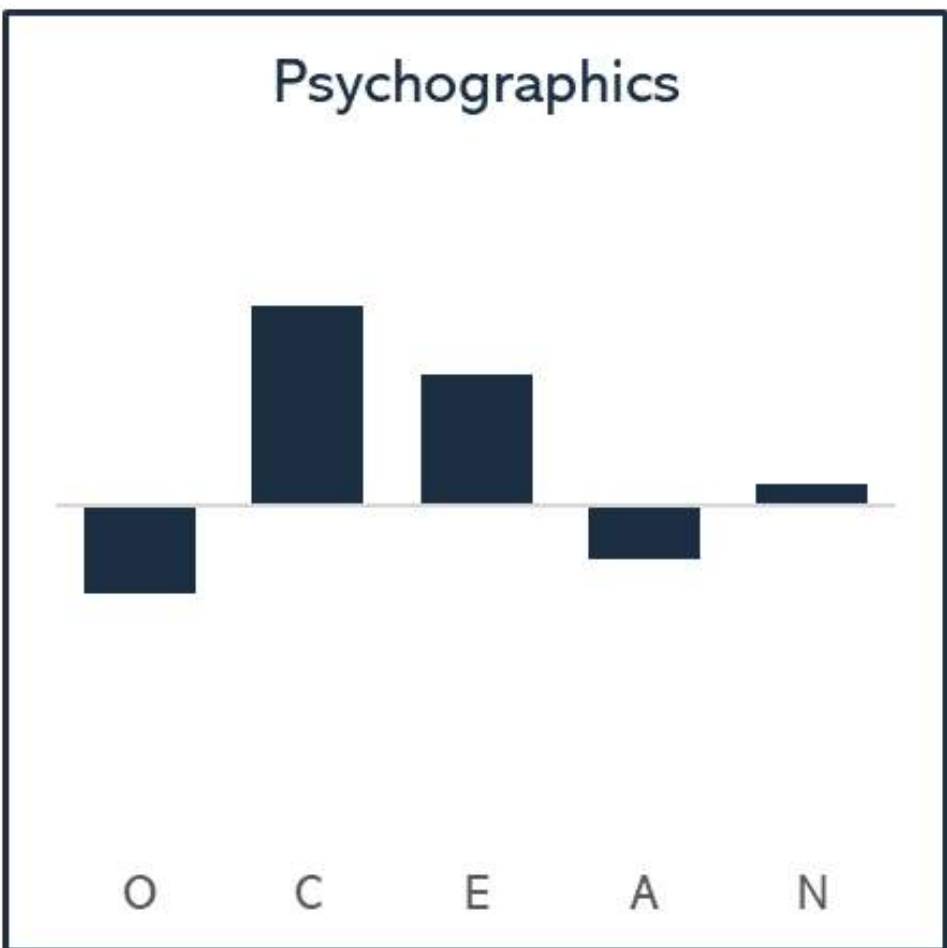
...AND CREATE MESSAGING RECOMMENDATIONS



Technographics



More advanced phones with more features. Lots of contacts, calendar events, media, SMS, apps. More likely to use apps for business, fitness, lifestyle, and less so for news or weather; more likely to play casino, RPG, and strategy.



Enjoy our exclusive **gorgonzola** flatbread on sourdough made **locally**. Available **only** at Pizza Express.


- CSR motive
- Highbrow tone
- Scarcity

THE ENTHUSIAST

This segment is more engaged with their phone and with life in general. They are outgoing, effective people who like to take on the world and win.

Aesthetics

Aesthetics should be colourful, bright, trendy, clear, and natural.



Persuasion

- Reciprocity:** Keeping social obligations and returning favours.
- Social Responsibility:** Doing the 'right' thing that is the popular trend.
- Scarcity:** Having special and unique (i.e., elite) experiences.

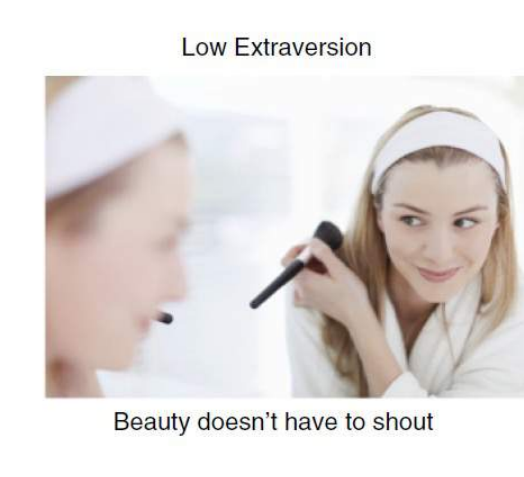
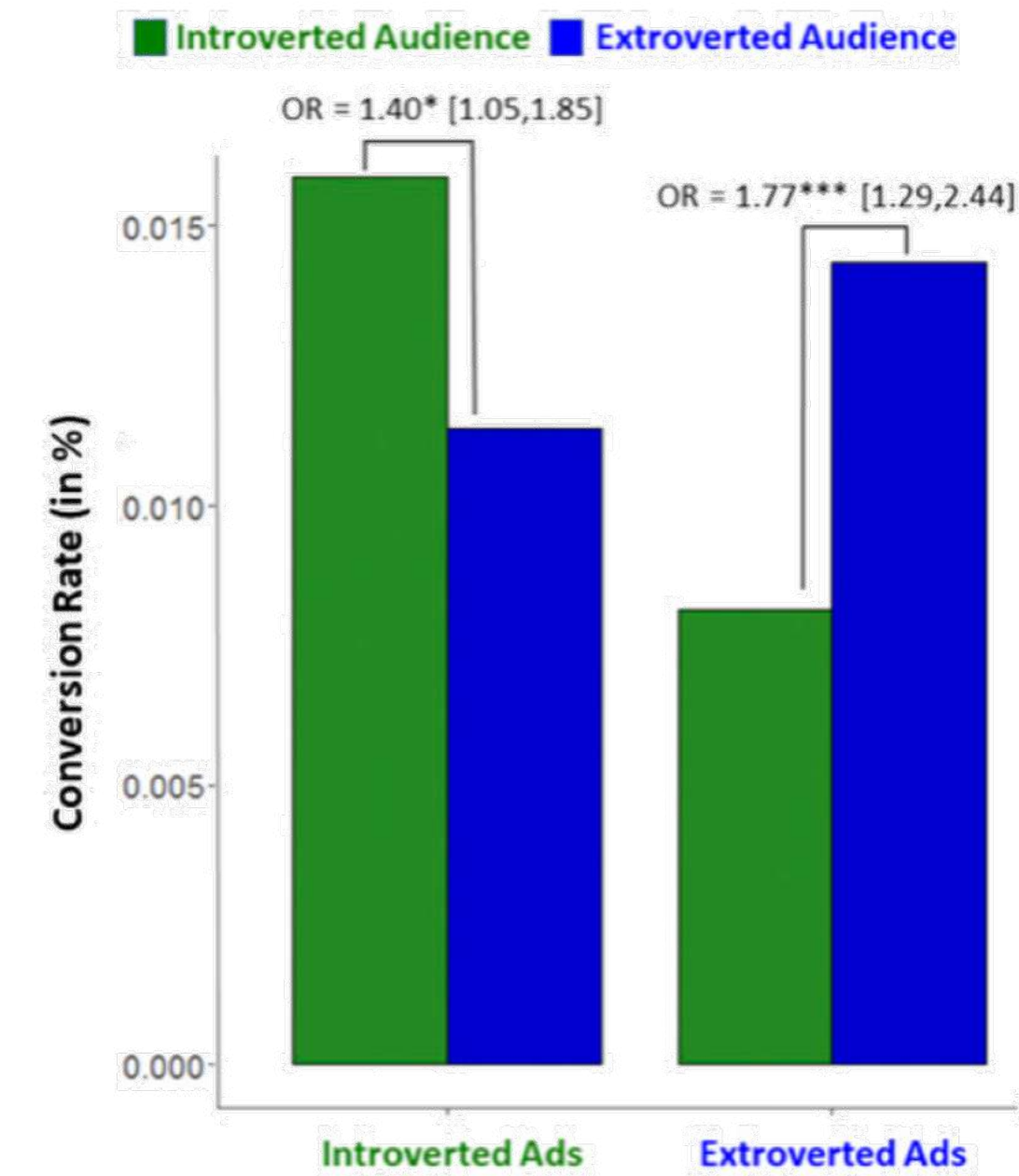
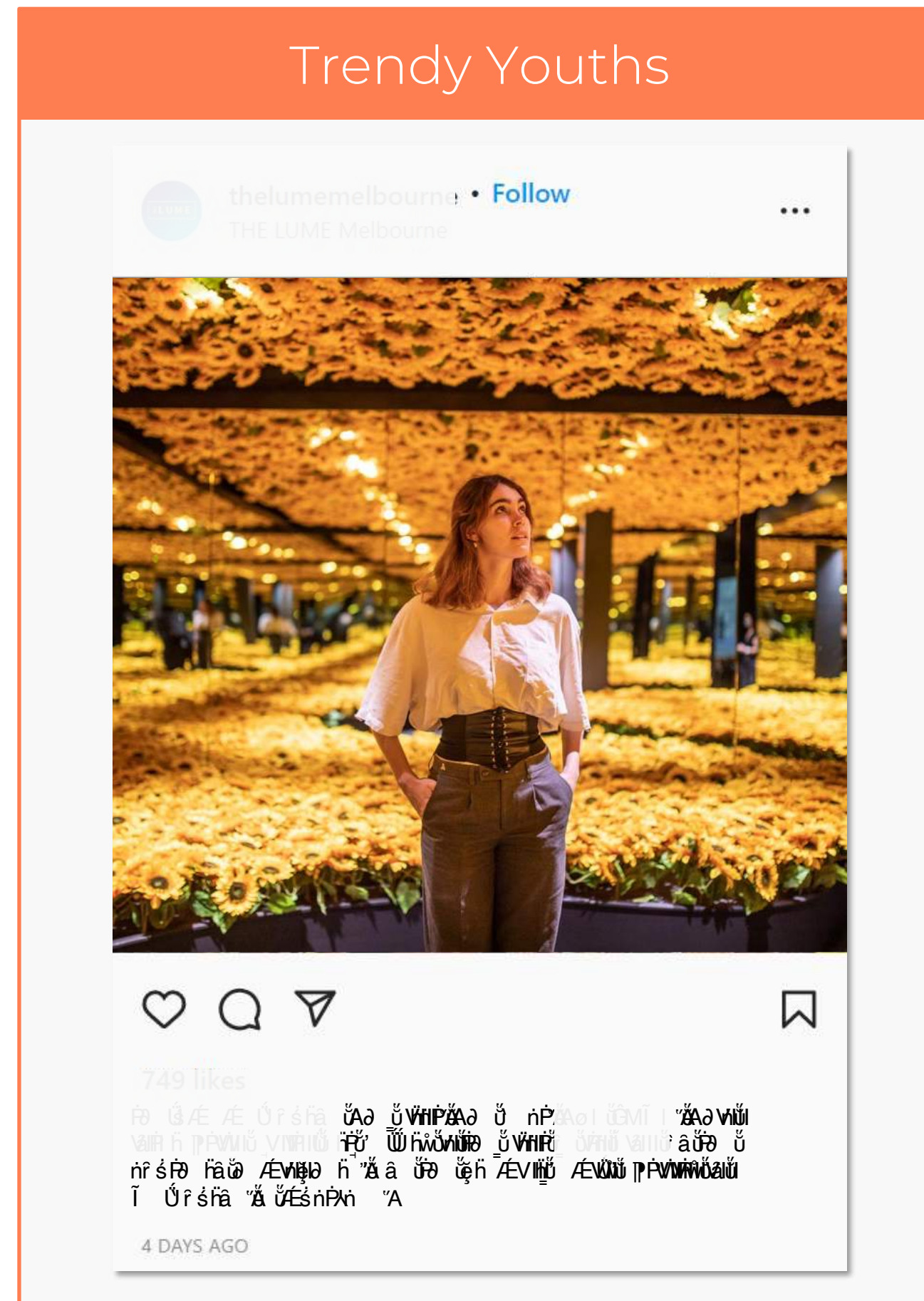
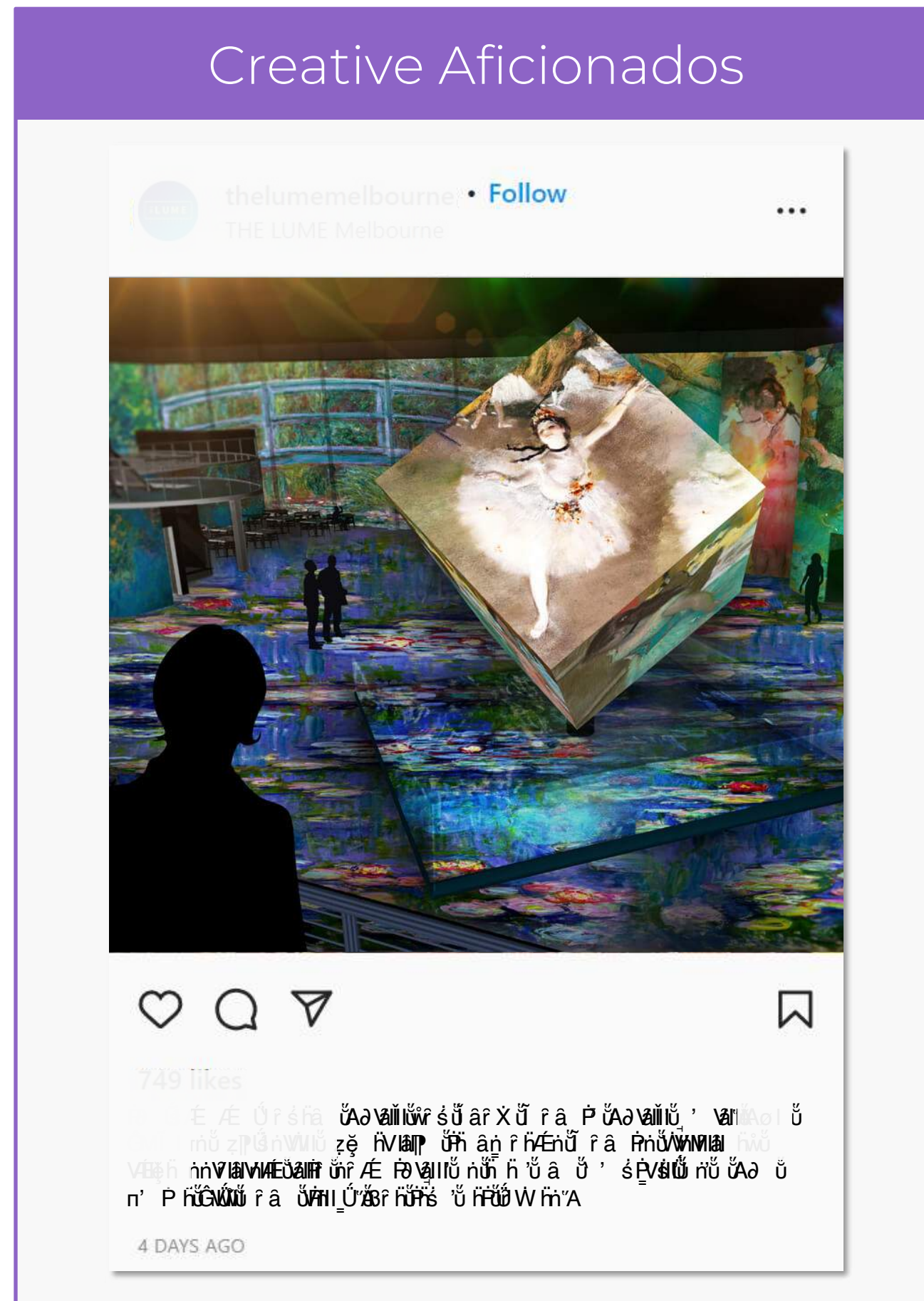
Tone



They admire the dreamer and explorer archetypes. They like language to be powerful, orderly, active, and social. It should be glamorous and highbrow.



UP TO 50% HIGHER CONVERSION RATES



- 1010
1010 Play time increasing from week to week
- 1010
1010 Number of self-imposed cool-off periods
- 1010
1010 Betting until having less than one dollar in the account
- 1010
1010 Visits to the self-exclusion page without using it
- 1010
1010 Frequency of making deposits
- 1010
1010 Deposits being rejected/declined
- 1010
1010 Visits to bonus page when no bonus was available
- 1010
1010 Number of hours spent online at unusual times
- 1010
1010 Number of repeat deposits ('top-ups') during sessions
- 1010
1010 Number of cash wagers per day
- 1010
1010 Volume of losses per active day
- 1010
1010 Gambling via desktop (casino) or smartphone (sports)
- 1010
1010 largest single-day total money wagered / deposited
- 1010
1010 Most bets in one day
- 1010
1010 Weekly bet amount
- 1010
1010 Variation in weekly bet amount

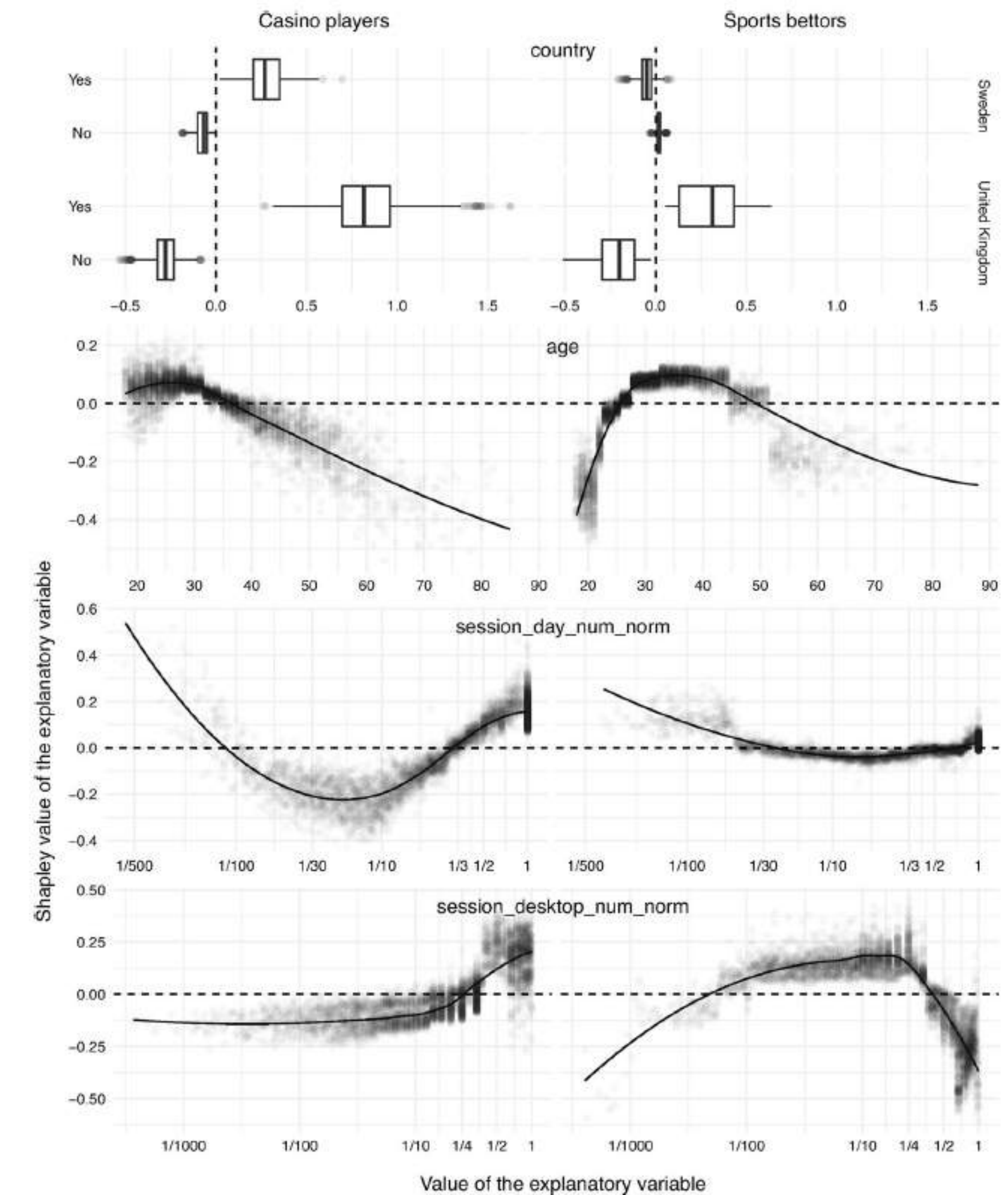


Fig. 3 Contribution of demographic and session-related explanatory variables, namely the country of registration (*first*), self-reported age (*second*), active days per day since registration (*third*), and proportion of sessions started on desktop computers (*fourth*)



A random forest procedure showed the highest classification performance, with AUROC of 79% and accuracy 80% in the main analysis.



Machine learning models confirmed the high correlation between **the first week** of gambling and a high-risk classification during the first three months after registration.



PRE-REGISTRATION DATA COULD HELP TOO



Table 3: Like Topics that are Most significantly Correlated with DDR.

Topic ID	Cor	P-value	Representative Likes
Positive Correlation			(Favored more by a today person)
141	+0.088	2E-7	<i>2Pac, Wiz Khalifa, Ludacris, Dr. Dre, Tyga ...</i>
430	+0.079	3E-6	<i>wake up in middle of night, look at clock, yes I still have time to sleep! OH, I GET IT! (Teacher walks away) Dude, i STILL dont get it ...</i>
431	+0.079	8E-6	<i>Ciara, R. Kelly, Tyrese Gibson, Kelly Rowland ...</i>
014	+0.065	1E-4	<i>The Tattoo Page, Kat Von D, Inked Magazine...</i>
369	+0.065	1E-4	<i>Lil Wayne, Drake, Eminem, Wiz Khalifa, Jay-Z ...</i>
Negative Correlation			(Favored more by a tomorrow person)
494	-0.106	4E-10	<i>Wikileaks, BBC Earth, Ferris Bueller's Day Off, Earth hour ...</i>
250	-0.091	7E-8	<i>Star Trek, The Shawshank Redemption, The Lord of the Rings (film), Star Wars ...</i>
481	-0.088	2E-7	<i>NPR, The Daily Show, The Colbert Report, The Onion, Barack Obama ...</i>
159	-0.085	4E-7	<i>The Lord of the Rings, The Lord of the Rings Trilogy, Lord Of the Rings, The Hobbit ...</i>
405	-0.083	9E-7	<i>George Takei, Ricky Gervais, Peter Jackson, Bill Nye The Science Guy, Ian McKellen ...</i>



TARGETED FEEDBACK IS IMPORTANT

Analyser mon jeu

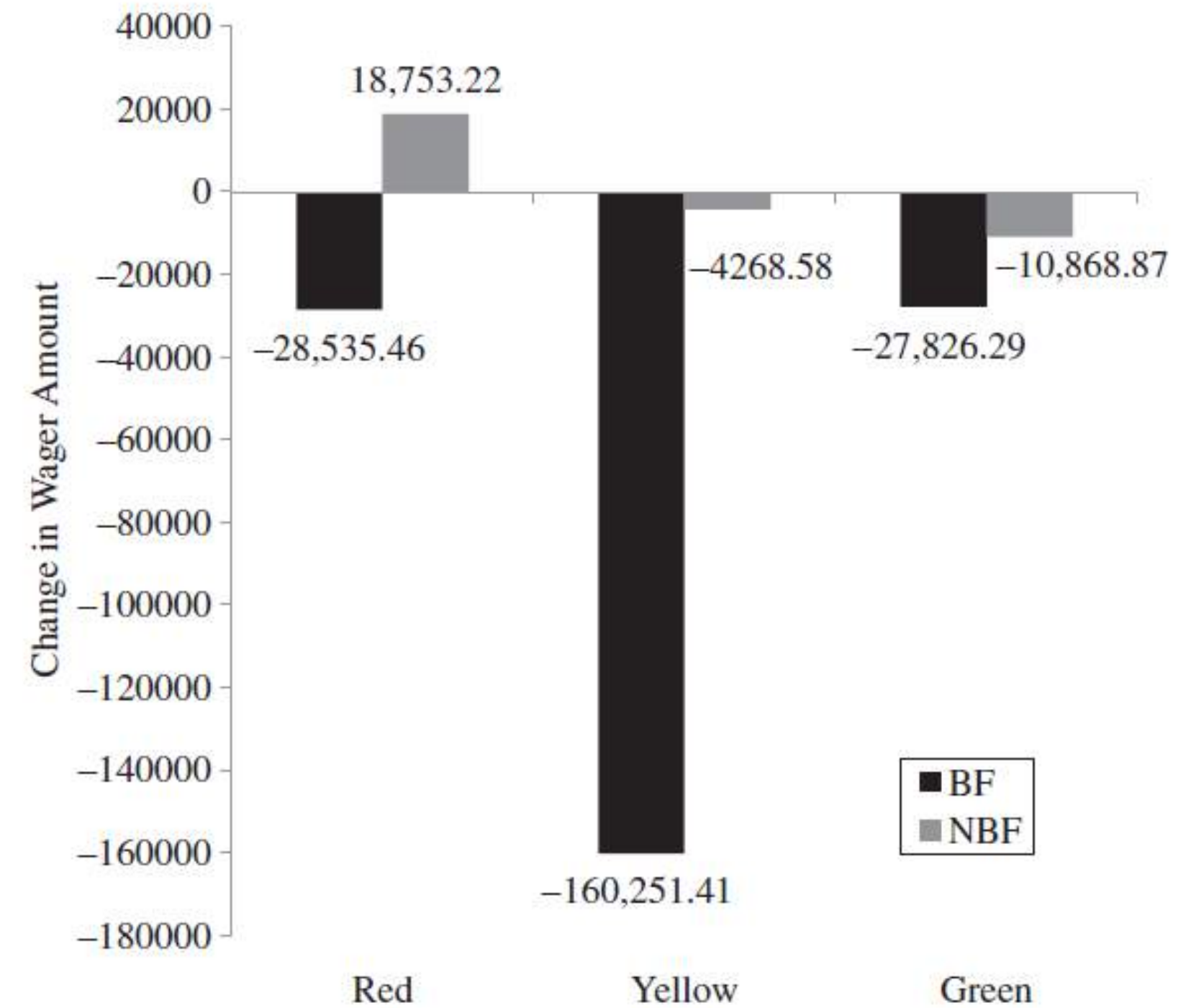
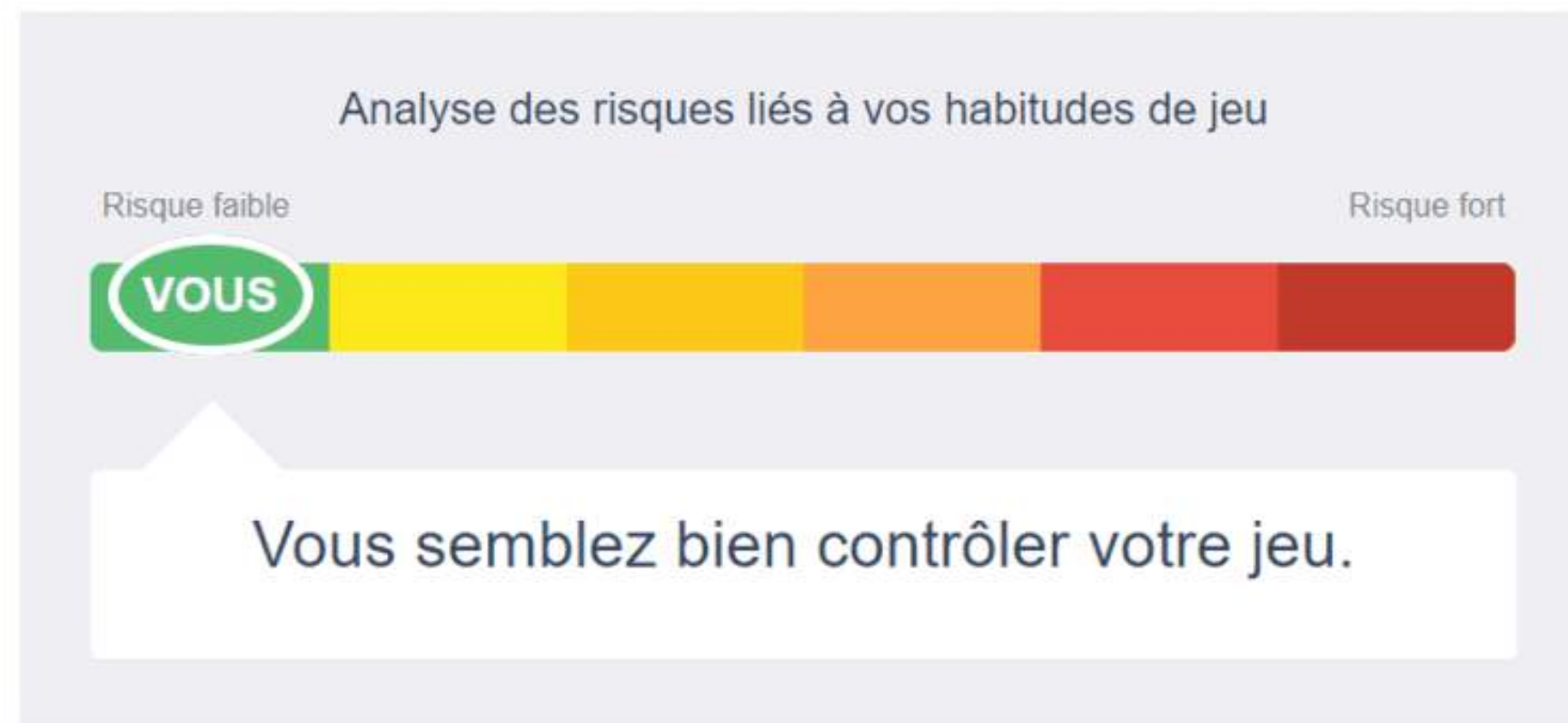
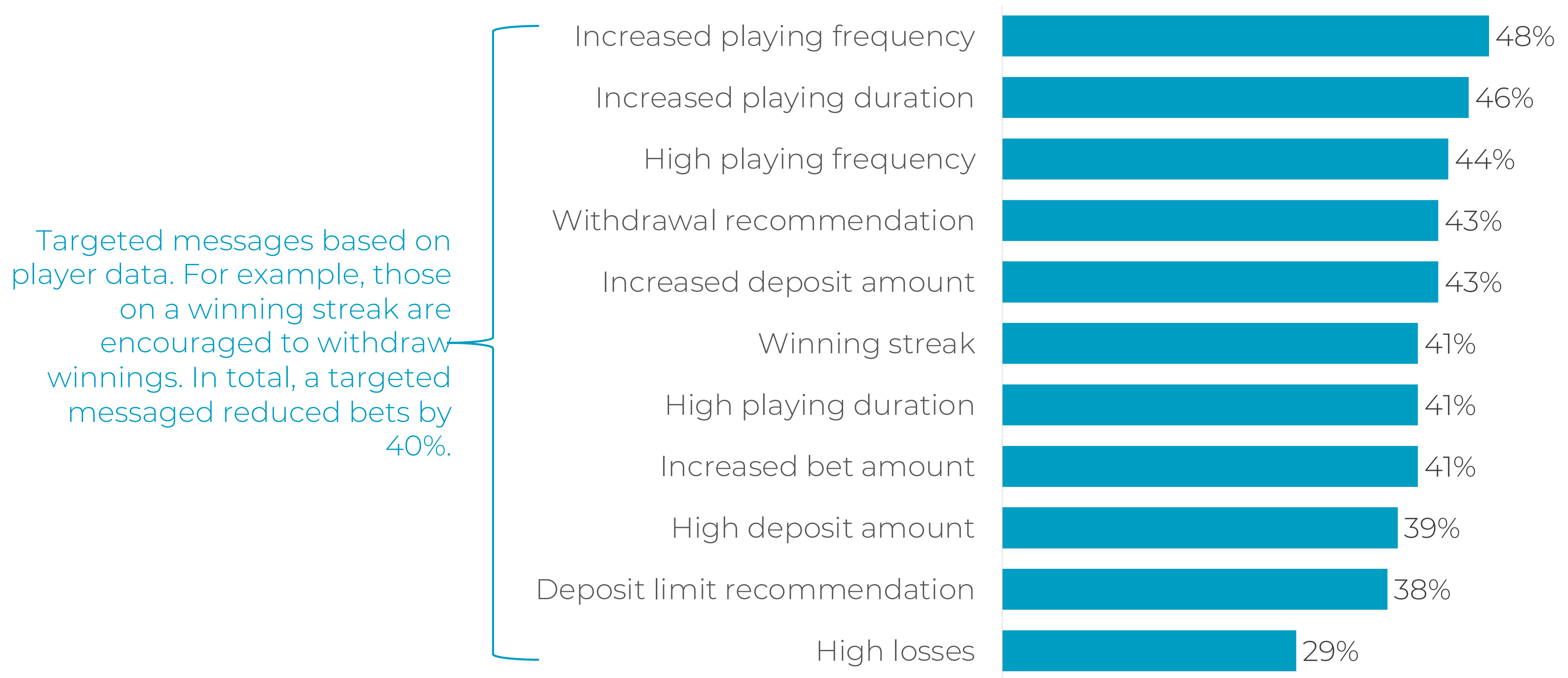


Figure 2. Wager change (Swedish Kroner): week of BF enrolment to 24 weeks later.



TARGETED FEEDBACK IS IMPORTANT

Reduction in amount bet after seven days



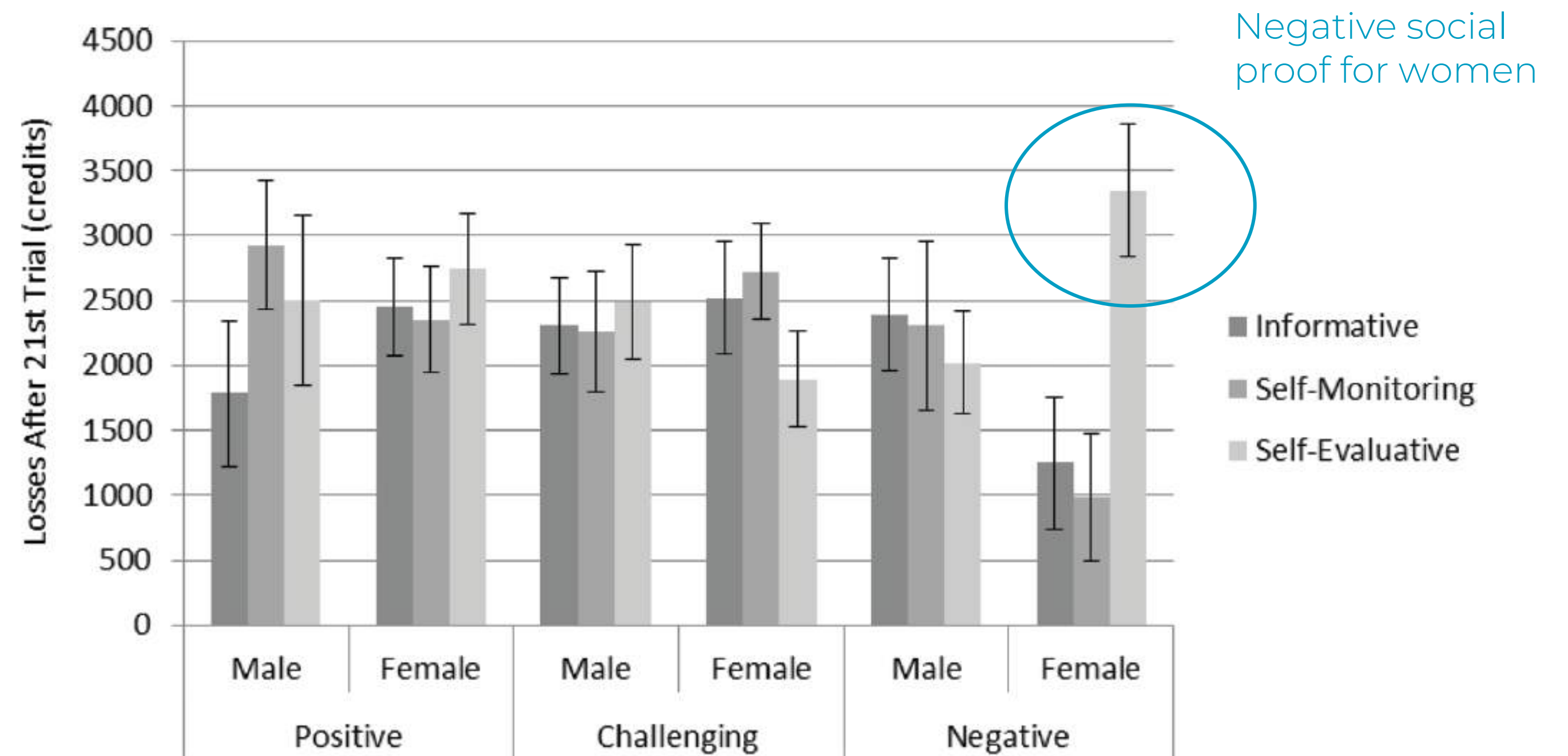
TARGETED FEEDBACK IS IMPORTANT

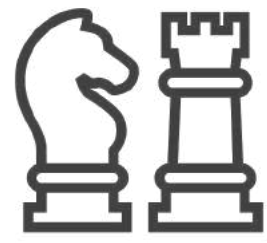


Figure 2. A screenshot of the simulated electronic gaming machine (EGM; left); and the simulated EGM with a “positive-informative” pop-up message (right).

Table 1
Matrix of Messages According to the Intelligent Messages Framework Developed by Langham et al. (2017)

Message Purpose	Message Frame		
	Positive	Challenging	Negative
Informative	Gambling at slower speeds leads to greater enjoyment.	Betting quickly equals losing quickly.	Betting too fast leads to problem gambling.
Self-Monitoring	Did you know your play speed has increased? Are you enjoying every spin?	Did you know your play speed has increased? Betting quickly equals losing quickly.	Did you know your play speed has increased? Betting too fast leads to problem gambling.
Self-Evaluative	You're playing faster than most people. Are you enjoying every spin?	You're playing faster than most people. Betting quickly equals losing quickly.	You're playing faster than most people. You're playing at similar speeds to most problem gamblers.





LOW
risk

PUZZLER



About
Place bets for fun, as a kind of social game



Smartphone Metadata
Puzzle gaming apps, crafting apps



Player Data
Low engagement overall; equally live and pre-live.



Personality
Stable, traditional and thoughtful



MID
risk

CASUAL



About
Place bets occasionally on impulse for the thrill



Smartphone Metadata
Streaming apps, arcade gaming apps



Player Data
Fewer but larger bets; also play casino games



Personality
Conservative but sensation-seeking



HIGH
risk

CHALLENGER



About
Bets for the challenge and status, and likes to brag



Smartphone Metadata
Fitness apps and financial trading apps



Player Data
Bigger bets, wins and withdrawals.



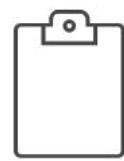
Personality
Disagreeable and risk-taking

“Why not commit to a plan today?”

“Jose Mourinho takes breaks, you know!”

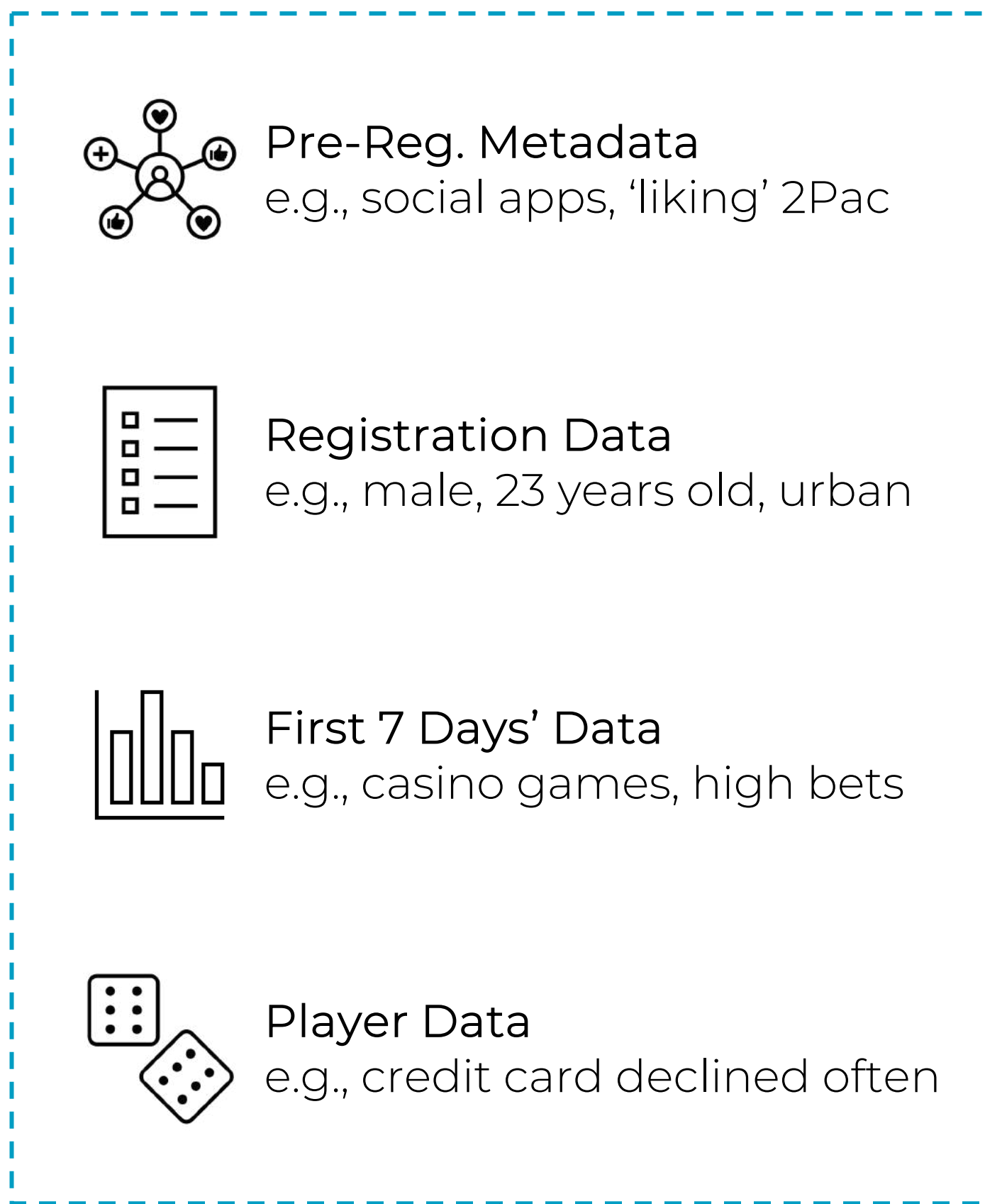
“A savvy player like you knows to quit ahead.”





PREDICTIVE MODEL BUILT VIA PSYCHOGRAPHIC SURVEY

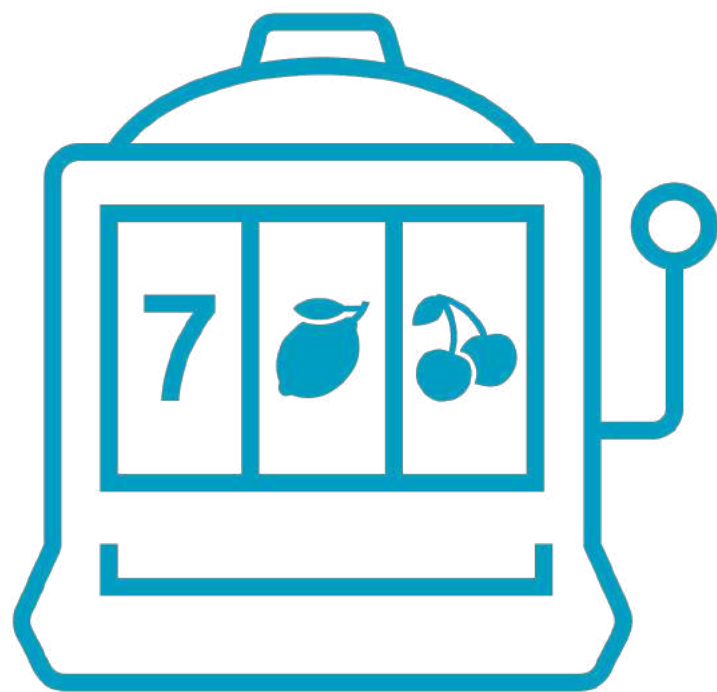
DATA ECOSYSTEM



TARGETED NUDGE
e.g., "You're too smart for this, my friend!"

BEHAVIOURAL RESPONSE TO NUDGE IMPROVES MACHINE LEARNING ALGORITHM





PLAY



PROTECT





DT@CAPUCHIN.CC





SCIENTIFIC THINKING FOR IRRATIONAL MINDS