How do slot game advert features impact gambling behaviour? An exploratory study
Results deck

September 2023

Contents

Executive Summary

BIT ran an online experiment to test how **different slot game advert features** (an element of an advert that serves a distinct purpose, such as an incentive, T&C, or call to action button) affect i) **gambling behaviour,** ii) **comprehension** of the advertised product, and iii) **attitudes** towards the advertised product. The sample contained 5,975 UK adults, 77% of whom were people who gamble.

Most of the slot game advert features tested did not affect behaviour on average, nor the perceived chances of winning. The exception was listing T&Cs that do not apply more saliently than those T&Cs that do apply; we found **repeating "no wagering"** in the advert's caption, sub-header and banner (see the "Low risk" advert on the right) marginally reduced comprehension of the other T&Cs. This suggests that individuals' understanding of T&Cs might be lowered if "no wagering" is more salient than the T&Cs that apply. Relatedly, we found **the majority of participants did not understand wagering requirements** (see slide 58 for a definition)**.**

While there was no impact on average, the features did impact the gambling behaviour of certain subgroups, namely **individuals with high Problem Gambling Severity Index (short-form PGSI) scores, and older individuals**. For those at high risk of gambling harm, features that emphasised the game had "low risk to potential reward" or the "ease of winning" increased total amount staked, and features that framed the game "fun" reduced stakes. While these specific results should be taken with caution due to being based on a smaller sub-sample, they suggest that advert features may have differential impacts for specific groups – but further research is needed.

Our "Low risk to potential reward" advert, which makes potential wins more salient than the potential risks of gambling.

NB the mock-ups use a fictional operator (BetGain) and slot game ('Fruit Rush').

3

Based on the disproportionate impact slot game advert features could have on vulnerable groups, we recommend further testing to inform any changes to guidance.

Despite finding no impact on average, specific slot game advert features may harmfully* impact the gambling behaviour of certain, potentially vulnerable groups. There is furthermore evidence that some features might lower comprehension of the advertised product. Future research should therefore focus on the impact on high-risk groups and comprehension, to further determine which features might be particularly harmful.

The current results provide evidence that the Committee of Advertising Practice (CAP) might consider the following revisions to their **responsibility and problem gambling guidance**[1]:

1. On average, emphasising "no wagering" seems to lower comprehension of other T&Cs, and for those at higher-risk of gambling harm, it may also increase gambling behaviour. CAP could therefore consider specifying how to use "no wagering" appeals responsibly. For example, under section 4.2 of the guidance – erroneous perceptions of risk and control – where it says "*stating or implying that offers (such as those involving money back, 'free' bets or bonuses, or enhanced odds) are a way to reduce risk*"[2] could be expanded to cover "no wagering" appeals.

2. Statements that imply ease of winning and control over outcomes (e.g. "more than 73,000 ways to win" or "you win it you keep it"), may also increase the 'illusion of control' among individuals, and gambling behaviour among those at high risk of gambling harm. Therefore section 4.2 could again be revised by extending the breach of rules list, so that it includes "implying control for chance-based games like slots", and statements that "downplay the uncertainty of winnings".

* We define harmful impact as: advert features result in uninformed decision-making and/or increase the risk of gambling harm among vulnerable groups. More detail on how we interpret our findings can be found in our analysis framework.

Future research on advert features may wish to investigate cumulative impact from repeated exposure, or include other important features that may affect the impact.

While the study's experimental design has pragmatic benefits, its subject to limitations that affect how likely these findings would replicate in the real world (its external validity). We would therefore advise against citing these findings in isolation as *slot game advert features having no impact for the majority of people*.

Future research could address some of the limitations by:

Investigating the impact of repeated exposure to adverts. Our experiment was limited to a single exposure to an advert, whereas in reality, individuals may see the same advert multiple times, which may have cumulative impact. However, we acknowledge that this could be difficult with a lab experimental design, so other methods should be considered.

Mimicking and testing the influence of other notable factors that may affect the impact of advert features. For example, this study used fictional gambling brands; in reality, operators can spend large budgets on building a brand identity and relationships with their target market.

Measuring additional behavioural outcomes to determine whether advert features impact these. For example, measuring the impact of advert features on specific risky play behaviour, such as loss chasing.

Background

The study's context and aims.

Gambling adverts influence gambling behaviour, but little is known about the effect of specific advert features, and whether this effect is harmful.

The latest data indicates the UK gambling industry spent more than £1.5 billion a year on advertising in 2017, a figure which increased by 56% between 2014 and 2017. The existing evidence suggests that advertising achieves its intended purpose to encourage sign-ups and deposits, and that exposure may lead to more frequent and riskier gambling – but it is not clear **when this impact shifts from being innocuous to harmful.**[3]

We aimed to examine this **impact** by testing **advert features***, which we define as elements of an advert that serve a distinct purpose, such as an incentive, terms & conditions (T&Cs), or call to action button. Understanding the impact at the feature level enabled us to generate more specific **policy recommendations**.

This study is part 2 of a research series. In part 1, we conducted a content analysis of over 100 slot game adverts[4], to understand what and how advert features are used, and to check whether there were any that may **mislead people or encourage them to gamble harmfully**. We found that:

- **Incentives** (e.g. free spins or bonuses) were the most common feature in slot game adverts.
- Many adverts were unclear about **the risk of play,** for instance by excluding important details (such as odds information).
- **T&Cs were often not displayed prominently**, potentially causing people to not be aware of important conditions to the offer.

We found that misleading features often exploited **behavioural biases**. These features included, among others, **salience** (drawing attention to specific elements of the advert) and **framing** (wording information in different ways to change its interpretation), **risk aversion** (exploiting people's tendency to prefer certainty over risk), and the **illusion of control** (exploiting people's tendency to overestimate their ability to control events).

* we lay out our focus on advert features in more detail in Appendix 1.

This study distinguishes between innocuous and harmful impact of slot game advert features by focusing on gambling behaviour and comprehension.

This study aims to measure the **impact of specific slot game advert features** to help **inform future iterations of gambling advertising regulation and guidelines**. We recognise slot game adverts are designed to encourage legitimate* gambling behaviour. However, we were interested in testing whether certain features might be potentially harmful because they:

Negatively affect the gambling behaviour of a vulnerable group (such as those at higher risk of, or already experience, gambling harms).

Lower the comprehension of the advertised product, and leads participants to bet more (or, less likely, less) than they otherwise would have.

What we did: We used the findings from our content analysis[5] to create realistic advert mock-ups, which included different groups of features that we could feasibly test in an online lab experiment. We presented the adverts in a simulated social media feed and gave participants the choice to play the advertised online slot game. We recorded their gambling behaviour during the game and asked them a series of questions about the advert they saw.

We chose to focus on slot game adverts because they are the highest risk type of gambling product, based on having the most average losses per player of online gambling products. Harmful gambling also includes high participation in online gambling (including slots).[6]

The results of this study are only based on slot game adverts, therefore may not be generalisable to advert features used for other types of gambling products.

* We define legitimate impact as: the expected impact of effective advertising. More detail on how we interpret our findings can be found in our analysis framework.

The study aimed to understand the impact of slot advert features on gambling behaviour, as well as on comprehension and attitudes towards gambling adverts.

Research question	Why did we test this?
1. Do specific features affect **gambling behaviour**, and how?	We are interested in the overall **impact slot game advert features have on gambling behaviour.**
2. Do specific features affect **comprehension of the advertised product,** and how?	**Advert features could incentivise their audience to make a less informed choice** by reducing comprehension of the advertised product.
3. Do specific features affect **attitudes towards the advertised slot game**?	We are interested in how the presence and/or salience of advert features potentially **change consumer sentiments compared to the business as usual control advert, or no advert.**
4. Do specific features have disproportionate **effects on different subgroups**? ● Age (18-34, 35-54, 55+) ● Risk of gambling harms based on short-form PGSI (none or low, moderate or high)	**Slot game advert features could have a disproportionate impact on certain groups.** Research suggests this could particularly be the case for older individuals[7], as well as those at risk of gambling harms[8].
5. Do specific advert features affect **engagement and recall**?	We hypothesise **engagement to be a mediating factor in the relationship between slot game advert features and our other outcome measures** of interest, and use **recall as a proxy for the level of engagement**.

Experimental design

The study's research design and analytical strategy.

The slot adverts we tested were designed iteratively: features identified in a contents analysis were included in mock-ups and user tested with people who gamble.

We started with the **typical advert** from our contents analysis. This advert included features and content present in the majority of a sample of 100 slot game adverts shared on social media.

We then designed **first drafts** for each arm. Treatment arms were chosen based on feedback from external topic experts, and a deliberative ranking exercise.

Subsequent **iterations** were informed by findings from our user testing to determine a) the credibility of the advert, b) if the features were having their intended effect.

Final designs (see next slide) were taking forward for testing.
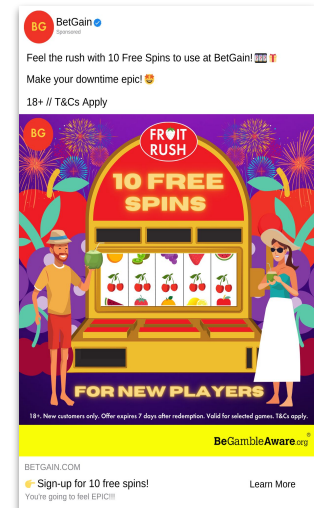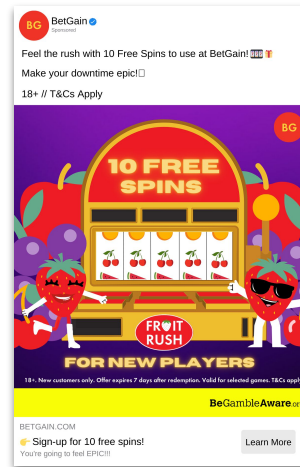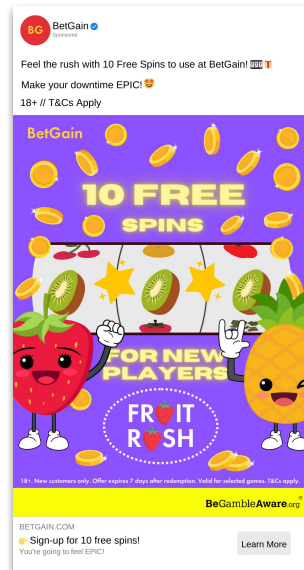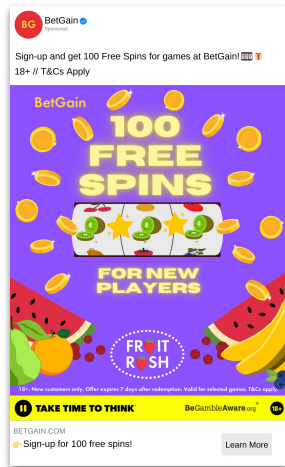
11

We designed five versions of a slot game advert with a different set of features (see Appendix 2), which we compared against the businesses as usual control advert.

No advert
N = 512

We also included a "no advert" control arm to **test the impact of the BAU control arm and of the incentive on decision to play.**

Business as usual (control) N = 1,415 Median viewing time* = 3s	Low risk to potential reward N = 1,340 Median viewing time = 3s	Ease of winning N = 1,323 Median viewing time = 3s	Fun-framing N = 1,385 Median viewing time = 3s	Good practice N = 1,390 Median viewing time = 4s

BetGain ✔
Sponsored

Sign-up and get 10 Free Spins to use at BetGain! 🎰🍒
18+ // T&Cs Apply

10 FREE SPINS
FRUIT RUSH
FOR NEW PLAYERS
18+. New customers only. Offer expires 7 days after redemption. Valid for selected games. T&Cs apply.
BeGambleAware.org

BETGAIN.COM
👉 Sign-up for 10 free spins!   Learn More

BetGain ✔
Sponsored

Sign-up and get 10 Free Spins to use at BetGain! 🎰🍒
There's no wagering, so you'll KEEP EVERYTHING YOU WIN!
18+ // T&Cs apply

10 FREE SPINS WELCOME OFFER
FRUIT RUSH
NO WAGERING
18+. New customers only. Offer expires 7 days after redemption. Valid for selected games. T&Cs apply.
BeGambleAware.org

BETGAIN.COM
👉 Sign-up for 10 free spins!   Learn More
There's no wagering, so you'll keep everything you win!

BetGain ✔
Sponsored

Sign-up and get 10 Free Spins to use at BetGain! 🎰🍒
More than 73,000 ways to win with every spin.
18+ // T&Cs Apply

10 FREE SPINS
FRUIT RUSH
73000+ WAYS TO WIN!
FOR NEW PLAYERS
18+. New customers only. Offer expires 7 days after redemption. Valid for selected games. T&Cs apply.
BeGambleAware.org

BETGAIN.COM
👉 Sign-up for 10 free spins!   Learn More
😮 Unlock more ways to WIN than you could ever imagine!

BetGain ✔
Sponsored

Feel the rush with 10 Free Spins to use at BetGain! 🎰🍒
Make your downtime epic! 😆
18+ // T&Cs Apply

10 FREE SPINS
FRUIT RUSH
FOR NEW PLAYERS
18+. New customers only. Offer expires 7 days after redemption. Valid for selected games. T&Cs apply.
BeGambleAware.org

BETGAIN.COM
👉 Sign-up for 10 free spins!   Learn More
You're going to feel EPIC!!!

This arm was removed from the study due to failing randomisation checks.** We are planning to re-run the experiment with this arm versus the control.

**This meant we could not isolate the impact of the treatment, due to the arm's participants having different demographics to the other arms. See the Appendix 3 for the full rationale.

Each arm tested a group of features that shared a common mechanism. We tested features in groups as this reflected how they appeared in adverts (as observed in our content analysis), and so that their combined effect might have a larger effect on participants' behaviour than individual changes. **See Appendix 2 for how we designed each arm.**

* measured in the mock social media feed.

12

We designed five versions of a slot game advert with a different set of features (see Appendix 2), which we compared against the businesses as usual control advert.

No advert	Business as usual (control)	Low risk to potential reward	Ease of winning	Fun-framing	Good practice
N = 512	N = 1,415	N = 1,340	N = 1,323	N = 1,385	N = 1,390
	Median viewing time* = 3s	Median viewing time = 3s	Median viewing time = 3s	Median viewing time = 3s	Median viewing time = 4s

We also included a "no advert" control arm to **test the impact of the BAU control arm and of the incentive on decision to play.**

Business as usual (control)

BG BetGain ✓
Sponsored

Sign-up and get 10 Free Spins to use at BetGain! 🎰🍒
18+ // T&Cs Apply

10 FREE SPINS

FRUIT RUSH

FOR NEW PLAYERS

18+. New customers only. Offer expires 7 days after redemption. Valid for selected games. T&Cs apply.

BeGambleAware.org

BETGAIN.COM
👉 Sign-up for 10 free spins!   Learn More

Low risk to potential reward

BG BetGain ✓
Sponsored

Sign-up and get 10 Free Spins to use at BetGain! 🎰🍒
There's no wagering, so you'll KEEP EVERYTHING YOU WIN!
18+ // T&Cs apply

FRUIT RUSH

10 FREE SPINS WELCOME OFFER

NO WAGERING

18+. New customers only. Offer expires 7 days after redemption. Valid for selected games. T&Cs apply.

BeGambleAware.org

BETGAIN.COM
👉 Sign-up for 10 free spins!   Learn More
There's no wagering, so you'll keep everything you win!

Ease of winning

BG BetGain ✓
Sponsored

Sign-up and get 10 Free Spins to use at BetGain! 🎰🍒
More than 73,000 ways to win with every spin.
18+ // T&Cs Apply

FRUIT RUSH

10 FREE SPINS

73000+ WAYS TO WIN!

FOR NEW PLAYERS

18+. New customers only. Offer expires 7 days after redemption. Valid for selected games. T&Cs apply.

BeGambleAware.org

BETGAIN.COM
👉 Sign-up for 10 free spins!   Learn More
😍 Unlock more ways to WIN than you could ever imagine!

Fun-framing

BG BetGain ✓
Sponsored

Feel the rush with 10 Free Spins to use at BetGain! 🎰🍒
Make your downtime epic! 😎
18+ // T&Cs Apply

FRUIT RUSH

10 FREE SPINS

FOR NEW PLAYERS

18+. New customers only. Offer expires 7 days after redemption. Valid for selected games. T&Cs apply.

BeGambleAware.org

BETGAIN.COM
👉 Sign-up for 10 free spins!   Learn More
You're going to feel EPIC!!!

Good practice

This arm was removed from the study due to failing randomisation checks. We are planning to re-run the experiment with this arm versus the control.

**This meant we could not isolate the impact of the treatment, due to the arm's participants having different demographics to the other arms. See the Appendix 3 for the full rationale.
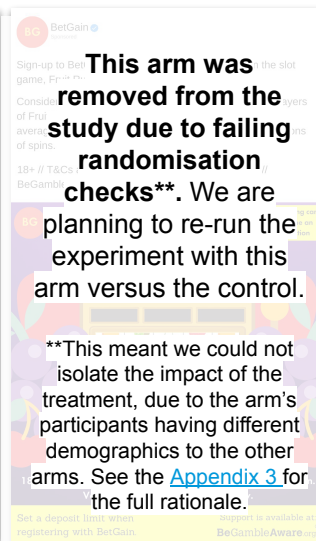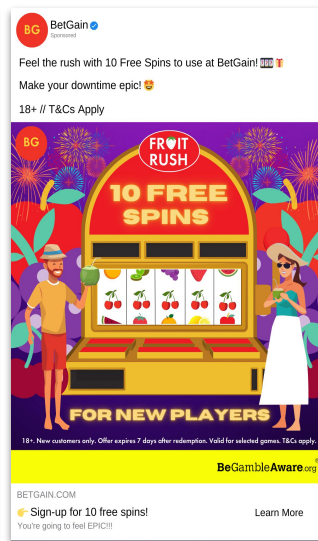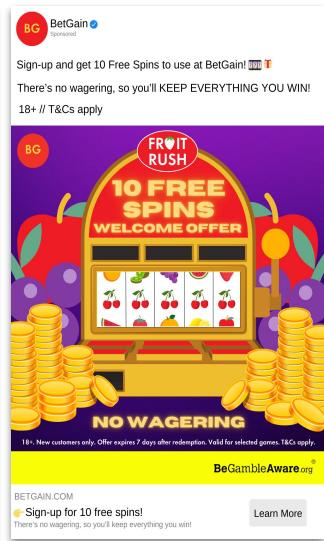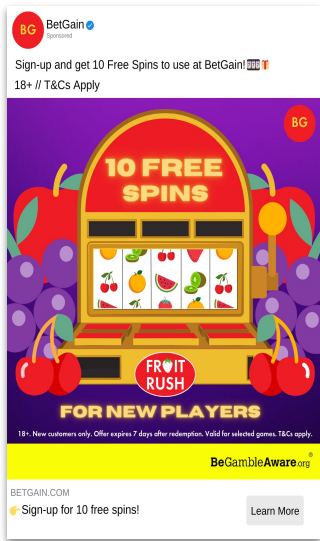
* measured in the mock social media feed.

Each arm tested a group of features that shared a common mechanism. We tested features in groups as this reflected how they appeared in adverts (as observed in our content analysis), and so that their combined effect might have a larger effect on participants' behaviour than individual changes. **See Appendix 2 for how we designed each arm.**

13

We recruited a representative sample of 5,975 participants in the UK, oversampling people who gamble (77%).

BIT recruited 5,975 participants between 18th May and 12th June 2023 to take part in this experiment. We used quotas to ensure that ~80% of the sample were people who gambled (defined as someone who does any form of gambling, at least every few months, except National Lottery).

NOTE ON INTERPRETING RESULTS
1. The sample doesn't capture the digitally excluded, or people not inclined to complete online surveys.
2. Just because people say they would do something in an online experiment when playing with "house money" doesn't mean they will in real life. We therefore interpret play percentages as an upper bound of real behaviour, and focus primarily on differences between arms.
3. Our sample size was chosen to provide adequate statistical power for our main outcomes of interest, and so we recommend interpreting comparisons for subgroups with caution.

Gender	
Women	56%

Risk of gambling harm (short-form PGSI)*	
Non-gambler	23%
No-risk	41%
Low-risk	14%
Moderate-risk	14%
High-risk	7%

Ethnicity	
White	88%
Asian	6%
Black	3%
Mixed / other	3%

Age	
18-34	39%
34-54	40%
55+	20%

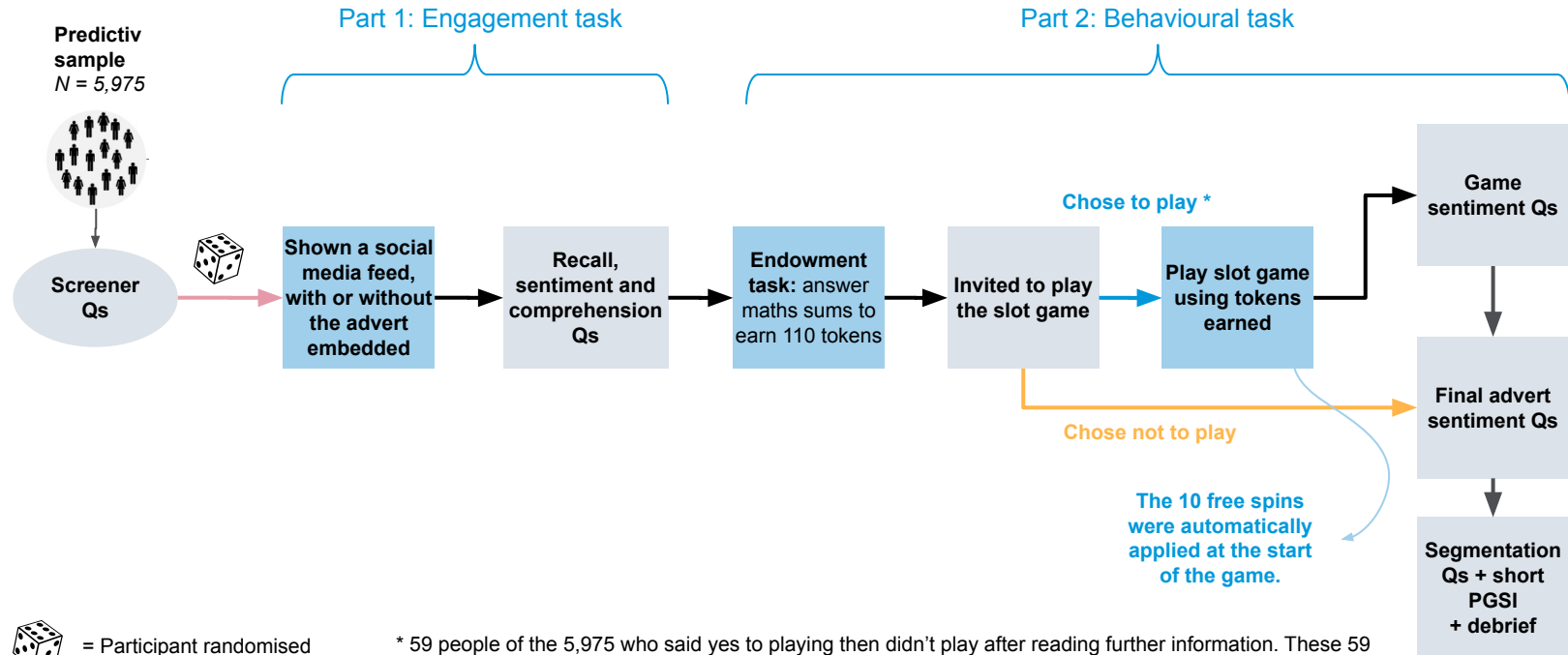| Region	
South & East	29%
North	26%
Midlands	19%
Scot/NI/Wales	14%
London	11%

Median time spent completing survey: 8m 57s
Also collected data for all respondents on income, education, employment and short-form PGSI score (calculated within survey).

* We use the short-form PGSI, based on 3 rather than the full 9 questions, to minimise burden on participants. A score of 4 or above is considered high-risk. We previously validated the short-form against the full PGSI, and found high agreement between the short and long form in our online experimental platform.

We ran a two-part experiment: the Engagement task tested advert recall, and the Behavioural task tested the impact of specific advert features on behaviour.

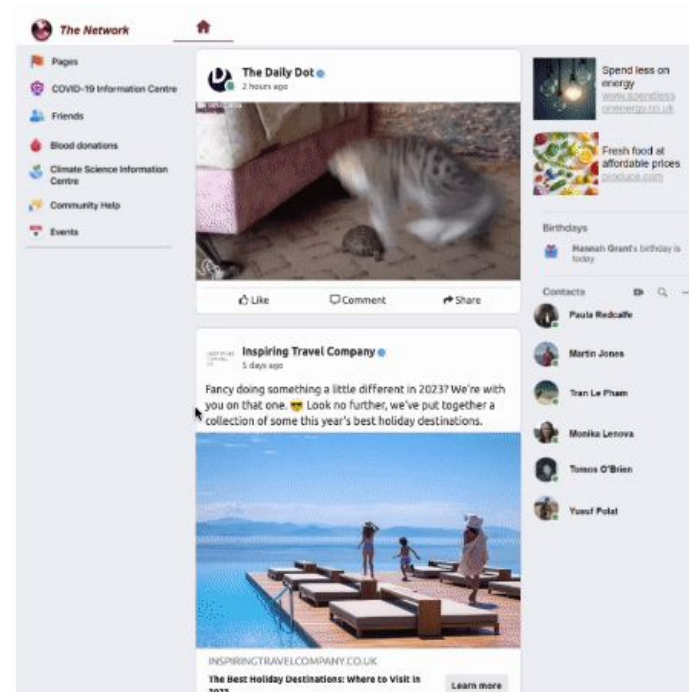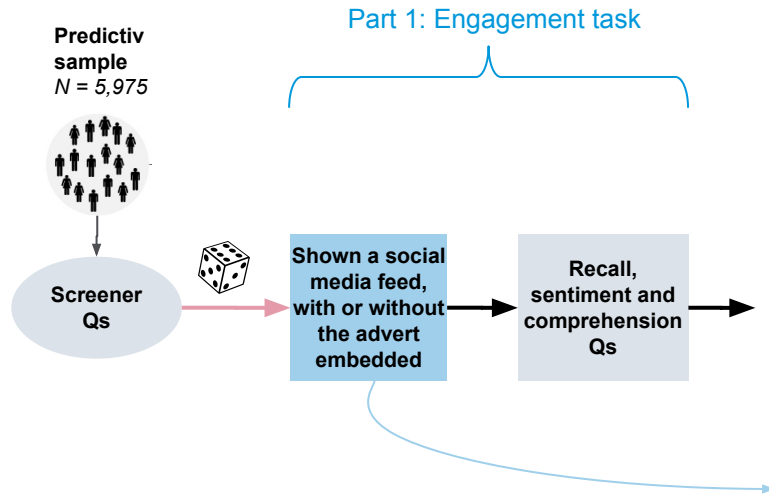**Predictiv sample**
N = 5,975

Part 1: Engagement task

Part 2: Behavioural task

Screener Qs

= Participant randomised to an advert arm

Shown a social media feed, with or without the advert embedded

Recall, sentiment and comprehension Qs

Endowment task: answer maths sums to earn 110 tokens

Invited to play the slot game

Chose to play *

Play slot game using tokens earned

Chose not to play

The 10 free spins were automatically applied at the start of the game.

Game sentiment Qs

Final advert sentiment Qs

Segmentation Qs + short PGSI + debrief

* 59 people of the 5,975 who said yes to playing then didn't play after reading further information. These 59 people still finished the experiment.

15

In the Engagement task, participants were shown a mocked up social media feed and were asked several questions to see what they remembered about the advert.

Part 1: Engagement task

Predictiv sample
N = 5,975

Screener Qs

Shown a social media feed, with or without the advert embedded

Recall, sentiment and comprehension Qs

= Participant randomised to an advert arm

Example social media feed, which participants could scroll through during the engagement task.

16

In the Behavioural task, participants could earn tokens playing a slot game, followed by a final set of questions on sentiment and demographics.

Part 1: Engagement task

Part 2: Behavioural task

Predictiv sample
N = 5,975

Screener Qs

Shown a social media feed, with or without the advert embedded

Recall, sentiment and comprehension Qs

Endowment task: answer maths sums to earn 110 tokens

Invited to play the slot game (see next slide)

Chose to play

Play slot game using tokens earned

Game sentiment Qs

Chose not to play

Final advert sentiment Qs

Segmentation Qs + short PGSI + debrief

= Participant randomised to an advert arm

We implemented an endowment task and included a sign-up process to increase the generalisability of our findings:

An endowment task (or real-effort task) is designed to create psychological ownership over the house money (Marsh et al. (2018); Carpenter and Huet-Vaughn, 2019). This aims to make a participant's decision to play a slot game and play behaviour closer to that of the real world (Erkal et al., 2011; Newall et al. 2022).

We also included a sign-up process, which had to be simplified to just accepting the game's terms and conditions. This was done before main data collecting due to it causing significant response drop-off during our pilot.

17

After earning funds from an endowment task, participants were invited to play 'Fruit Rush', an inhouse slot machine game used to measure gambling behaviour.
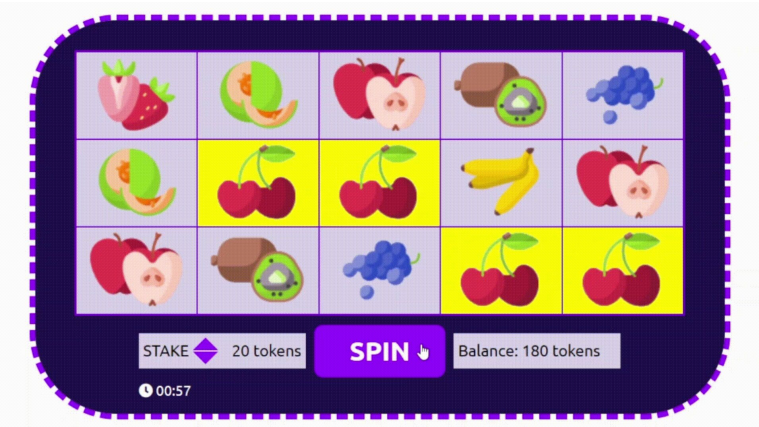
Example game play from Fruit Rush, which participants could choose to play during the behavioural task.
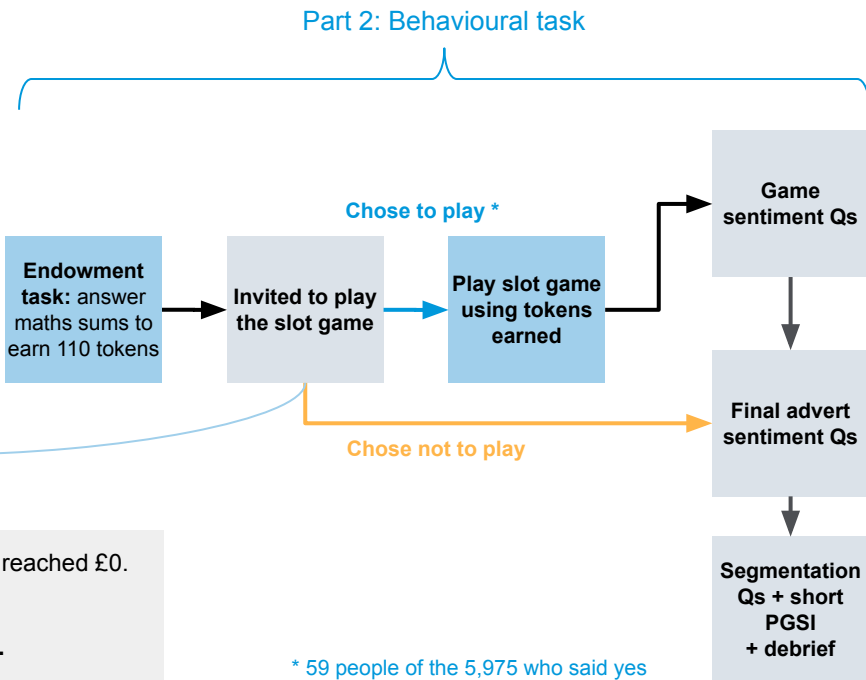
The game automatically ended after 5 min or when participant's balance reached £0.

Fruit repetitions in adjacent reels reward the following:
(A) 3x: a bonus spin; (B) 4x: 3x of the stake; (C) 5x: 18x of the stake.

Part 2: Behavioural task

Endowment task: answer maths sums to earn 110 tokens

Invited to play the slot game

Chose to play *

Play slot game using tokens earned

Chose not to play

Game sentiment Qs

Final advert sentiment Qs

Segmentation Qs + short PGSI + debrief

* 59 people of the 5,975 who said yes to playing then didn't play

18

We created an analysis framework to determine what type of impact the slot game advert features had on gambling behaviour: none, legitimate or harmful.

We used Fruit Rush to measure the impact of gambling advert features on two primary behavioural outcome measures: 1) decision to play and 2) average total stake per participant. The analysis framework below outlines how we determined what type of impact these features had.

Behavioural outcome measure	No impact	Legitimate impact – *the expected impact of effective advertising*	Harmful impact – *advert features result in uninformed decision-making and/or increase the risk of gambling harm among vulnerable groups.*
1) Decision to play - After seeing the advert and being introduced to the game, participants were invited to play the slot game. We recorded the participant's response to this invitation. **2) Average total stake per participant** - Participants were given 10 free spins; after which they could choose how much to stake each spin. They could bet a minimum of £0.05/ 5 tokens and a maximum of £1.00/ 100 tokens each spin.	There is no significant difference in 1) the decision to play, 2) average total stake per participant, between the treatment and Business as usual (BAU) groups, and/or the no advert vs. BAU groups.	There is a significant increase in 1) participants who choose to play, 2) average total stake per participant, between the treatment and BAU groups, and/or the no advert vs. BAU groups. Comprehension is unaffected and the behaviour of vulnerable groups does not increase.	Comprehension is significantly reduced, and the 1) decision to play, and/or 2) average total stake per participant is significantly higher, between the treatment and BAU groups, and/or the no advert vs. BAU groups. This suggests 1) participants may have made an uninformed decision to play, due to how they interpreted the advert features, 2) the features may have mislead participant's understanding of the game's risk and/or their agency, leading them to gamble more intensely. Those at high risk of gambling harms 1) decide to gamble significantly more, 2) have a significantly higher average stake, between the treatment and BAU groups, and/or the no advert vs. BAU groups. Either of these could be harmful, as it increases risk of experiencing gambling harm.

19

Headline Findings

Main analysis of the impact of slot game advert features on gambling behaviour, comprehension, and attitudes.

THE
**BEHAVIOURAL
INSIGHTS
TEAM**

THE
**GAMBLING
POLICY &
RESEARCH
UNIT**

On average, slot game advert features did not affect gambling behaviour. The "Low risk" features slightly reduced comprehension of T&Cs, and increased intent to play.

Do specific features affect **gambling behaviour**, and how?	**On average, none of the tested features had an impact** on the decision to play the slot game, the total amount staked, and the number of spins played compared to the business as usual advert.
	Not showing an advert increased the percentage of people playing the game in this experiment compared to our business as usual advert. A reason for this unexpected finding might be that the experiment was shorter for no advert participants, and/or less information about the game led to more curiosity when asked to play (a detailed explanation is in Appendix 3).
Do specific features affect **comprehension of the advertised product,** and how?	Features of the **"Low risk" advert marginally reduced the average comprehension of the offer T&Cs.** This is potentially due to the salient inclusion of a T&C that does not apply ("NO WAGERING").
Do specific features affect **attitudes towards the advertised slot game**?	**None of the features affected sentiments towards the advertised slot game**. Overall, the majority of participants felt positive or neutral.
	Participants were marginally **more likely to say they wanted to play the advertised slot game after seeing the "Low risk" advert**. However, despite this advert's greater appeal, it did not increase motivation enough to significantly change actual behaviour.

21

None of the features changed the decision to play the slot game relative to our "Business as usual" advert, though those not seeing an advert decided to play more.

The lack of difference between adverts suggests that the presence, and salience of certain features has little impact on play decisions for people on average.

Participants who didn't see an advert were **14 percentage points more likely** to decide to play Fruit Rush compared to the no-advert control group.

We believe this may be due to a shorter experiment duration, and less information before the decision to play heightening curiosity. See Appendix 3 for full details.

% of participants who…	Business as usual	Low risk to reward	Ease of winning	Fun framing	No advert
Decided to play	49%	52%	48%	49%	63%*

Participants in the lower risk arm were more likely to play the slot game compared to the "Business as usual" control, but this difference was not statistically significant.

Primary analysis
Stars Indicate significance compared to the BAU advert arm at p<0.05 after correction for 4 comparisons using the Benjamini-Hochberg Procedure.
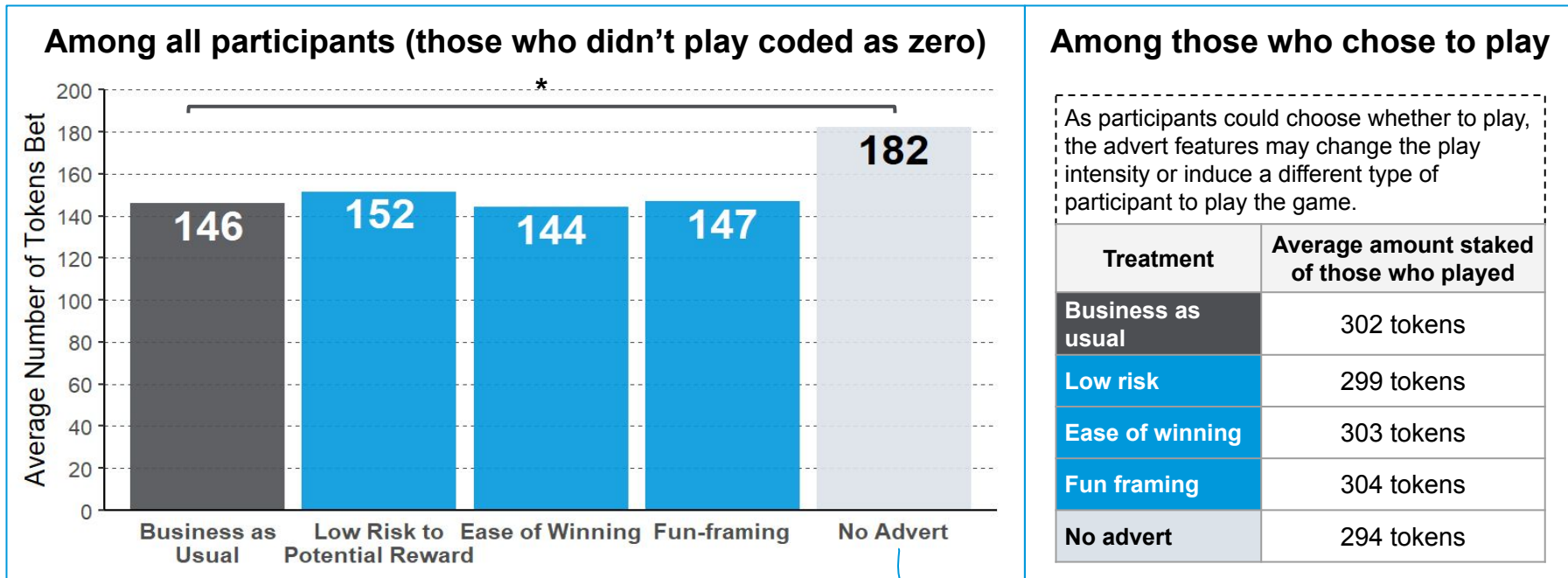*Covariates are short-form PGSI category, slot play dummy, age category, gender, region, education dummies, ethnicity, region, urban area dummy, and household income above median.*
N = 5,975. Data collected by BIT on 18 May - 12 June 2023.

None of the features tested had an impact on the amount staked. The no advert group staked more, driven by a higher percentage choosing to play.

Among all participants (those who didn't play coded as zero)

Average Number of Tokens Bet

*

Business as Usual: 146
Low Risk to Potential Reward: 152
Ease of Winning: 144
Fun-framing: 147
No Advert: 182

Primary analysis. N = 5,975.
Those who elected not to play are coded as zero.
Stars indicate significance compared to the BAU advert arm at p<0.05 after correction for 4 comparisons using the Benjamini-Hochberg Procedure. Covariates include short-form PGSI category, slot play dummy, age category, gender, region, education dummies, ethnicity, region, urban area dummy, and household income above median. Data collected by BIT on 18 May - 12 June 2023.
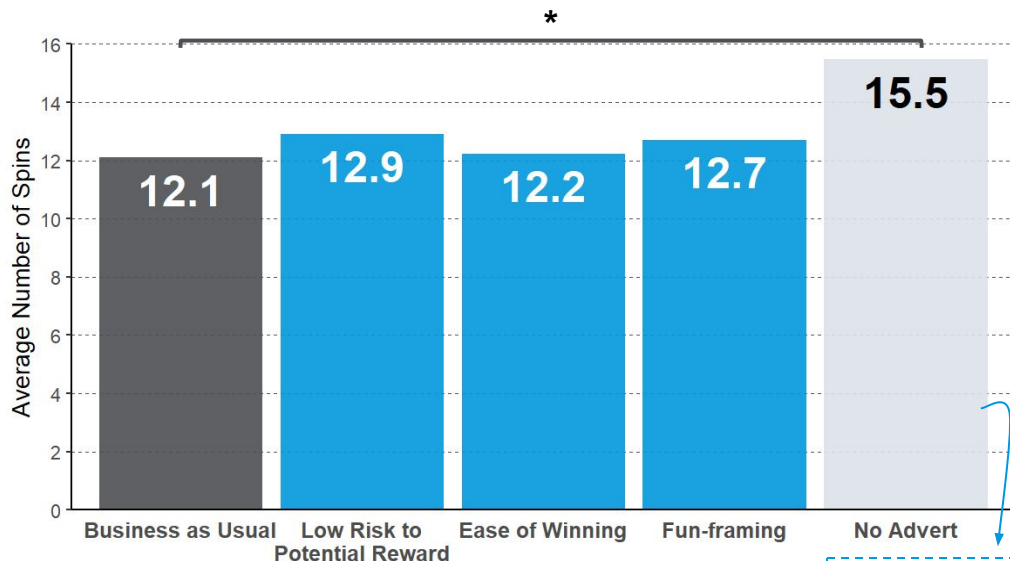
Among those who chose to play

As participants could choose whether to play, the advert features may change the play intensity or induce a different type of participant to play the game.

Treatment	Average amount staked of those who played
Business as usual	302 tokens
Low risk	299 tokens
Ease of winning	303 tokens
Fun framing	304 tokens
No advert	294 tokens

The no advert group staked more, but this was due to higher play percentages (Appendix 3).

23

None of the features increased the number of spins compared to the BAU advert. The no advert group played more spins, again due to a higher percentage who played.

Among all participants (those who didn't play coded as zero)

*

Among those who chose to play

As participants could choose whether to play, the advert features may change the play intensity or induce a different type of participant to play the game. However, the results below suggest that there was no difference in intensity among those who played.

Treatment	Average number of spins of those who played
Business as usual	25.1 spins
Low risk	25.5 spins
Ease of winning	25.7 spins
Fun framing	26.3 spins
No advert	25.0 spins

The no advert group played more spins more, but this was due to higher play percentages (see Appendix 3).

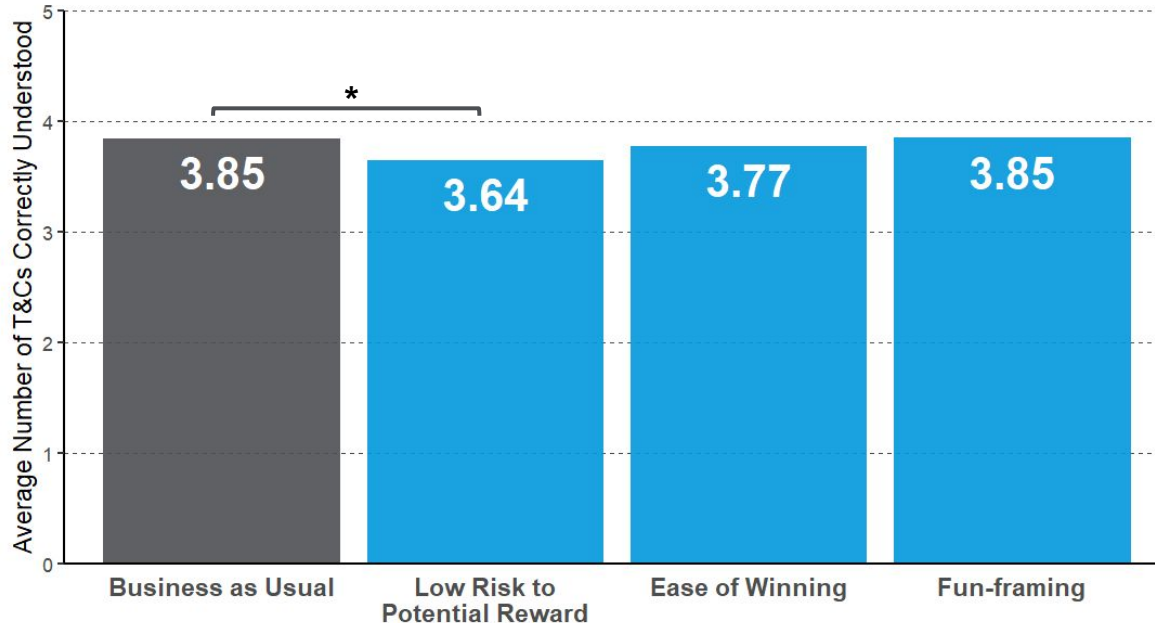*Secondary analysis. N=5,975.*
Those who didn't play are coded as zero.
Stars indicate significance compared to the BAU advert arm at p<0.05 after correction for 4 comparisons using the Benjamini-Hochberg Procedure in a covariate adjusted poisson regression. As a robustness check we ran a zero-inflated poisson regression with identical results (see appendix 3 for details).
Covariates include short-form PGSI category, slot play dummy, age category, gender, region, education dummies, ethnicity, region, urban area dummy, and household income above median. Data collected by BIT on 18 May - 12 June 2023.

Features of the "Low risk" advert marginally reduced average comprehension of the offer T&Cs, potentially due to the emphasis on "NO WAGERING" in the main body.

Among all T&Cs, we were most interested in comprehension of **wagering requirements**, due to the high consequences these have on the ability to withdraw funds, and thus potentially on individuals gambling behaviour. Our advert didn't have a wagering requirement, but **we found that wagering requirements are generally misunderstood across all advert arms.** See Appendix 3 for the full results.

Secondary analysis. N = 5,975.
Stars indicate significance compared to the BAU advert arm at 5% level correcting for 4 multiple comparisons using the Benjamini-Hochberg procedure.
Standard errors robust to heteroskedasticity.
Covariates include short-form PGSI category, slot play dummy, age category, gender, region, education dummies, ethnicity, region, urban area dummy, and household income above median. Data collected by BIT on 18 May - 12 June 2023.

25

None of the features affected positive or negative sentiments towards the advertised slot game. Overall, the majority of participants felt positive or neutral.

	Business as usual (n=695)	Low risk to potential reward (n=697)	Ease of winning (n=640)	Fun-framing (n=684)	No advert (n=324)
Positive sentiment score (average percentage of people who agree that playing the game made them feel excited, happy, or in control)	40%	41%	40%	42%	40%
Negative sentiment score (average percentage of people who agree that playing the game made them feel anxious or stressed)	9%	9%	9%	9%	6%

Exploratory analysis.
There were no statistically significant results.
Standard errors robust to heteroskedasticity.
Only those choosing to play the game answered this question.To the extent that different adverts induced different types of people to play, any differences may represent selection effects rather than treatment effects.
Data collected by BIT on 18 May - 12 June 2023.

Participants were marginally more likely to say they wanted to play the advertised slot game after seeing the "Low risk" advert compared to the Business as Usual advert.

% of participants who thought the advert moderately or really…	Business as usual	Low risk to potential reward	Ease of winning	Fun-framing
(N=5,463)				
Made them want to play "Fruit Rush"?	**23%**	**26%***	**25%**	**24%**
Was easy to understand	70%	66%	66%	67%
Was trustworthy	29%	31%	29%	32%
Was eye-catching	58%	59%	59%	57%
Was something they'd expect to see in their social media feed	47%	48%	45%	47%

Despite "Low risk" participants saying they were more likely to play, we found this <u>did not significantly affect behaviour</u>. This suggests the "Low risk" features are appealing, but do not increase motivation to play enough to change behaviour.

Low risk to potential reward advert

Top row is primary analysis, the rest are descriptives only. Answer options: Not at all / A little / Moderately / Very much.
Stars indicate significance compared to the BAU advert arm at p<0.05 after correction for 3 comparisons using the Benjamini-Hochberg Procedure..
Covariates include short-form PGSI category, slot play dummy, age category, gender, region, education dummies, ethnicity, region, urban area dummy, and household income above median. Data collected by BIT on 18 May - 12 June 2023

27

Additional findings

Exploratory results to support the interpretation of headline findings, including segmentation analysis and reported behaviour.

Advert features may have disproportionate impacts on specific groups. Generally features did not affect engagement with, or comprehension of, the advertised game.

Do specific features have disproportionate **effects on different subgroups**?	**Advert features significantly increased the amount staked by those at high-risk of gambling harm (short-form PGSI 4+), and/or aged 55+.** The exception was the "Fun-framing" features, which reduced the amount staked among participants at high-risk of gambling harm. However, this was exploratory analysis and should be interpreted with caution due to the risk of false positives.
Do specific advert features affect **engagement and recall**?	**Regardless of advert features, most participants recalled seeing a slot game advert with free spins** on their social media feed, but only roughly half understood you could win or lose money.
Do specific features affect **comprehension of the advertised product,** and how?	**"Low risk" features may increase the illusion of control**, namely the extent to which an individual thinks they have control over uncontrollable outcomes. This could be due to the advert making statements like "you win it you keep it".
	In contrast, **none of the advert features changed perceived chances of winning** as a reason to play (or not play) the slot game. Similarly, very few participants were overconfident about winning compared to their actual outcome.
Do specific features affect **attitudes towards the advertised slot game**?	**Generally, few participants regretted choosing to play the game and this was lowest among those who saw no advert.** This may be because no-advert participants were less likely to feel they were 'manipulated' into playing, or it could be due to the differences in the type of participant that chose to play across different arms.

Additional findings - Segmentation

The impact of slot game advert features by risk of gambling harms and age.

THE
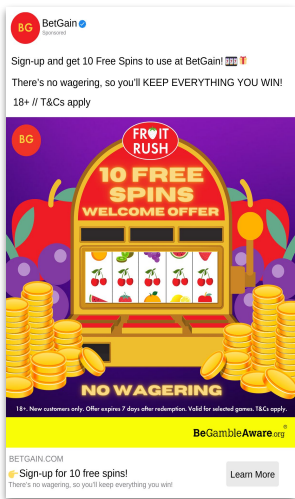**BEHAVIOURAL
INSIGHTS
TEAM**

THE
**GAMBLING
POLICY &
RESEARCH
UNIT**

All advert features significantly changed (+/-) the amount staked by those at high-risk of gambling harm (short-form PGSI 4+), but not for those in lower risk groups.
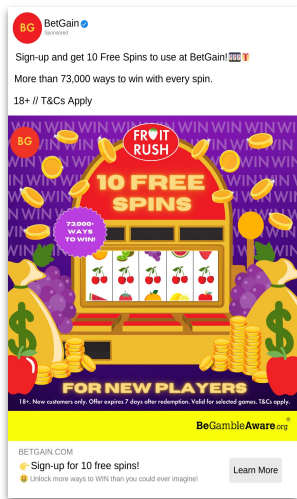
Among participants at high risk of gambling harm (short-form PGSI 4+) (N = 576)

Low risk to potential reward

Ease of winning

Fun-framing

No advert

Those at high-risk of gambling harm also played more in the no advert arm than the Business as usual, matching the [experiment wide](#) pattern.

This is driven by the higher play percentages in the no advert arm, explained in detail [here](#).

None of the adverts affected decision to play, regardless of risk of gambling harms.

The **amount staked by those at low or medium risk was also unaffected** by advert features.

Click [here](#) for full results.

⬆ Amount of tokens staked by **25 percent** **(132→165)**

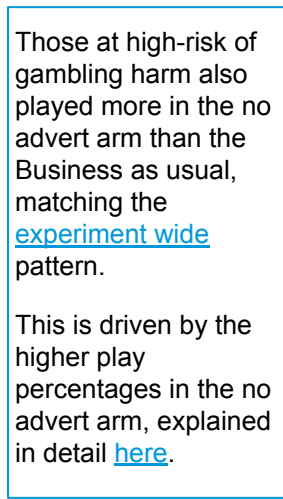⬆ Amount of tokens staked by **24 percent** **(132→164)**
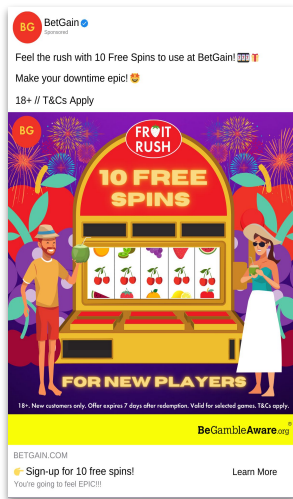
⬇ Amount of tokens staked by **16 percent** **(132→114)**

⬆ Amount of tokens staked by **58 percent** **(132→208)**

Those who didn't play are coded as zero for total amount staked.
Exploratory subgroup analysis. Full results [here](#).
All results significant compared to the BAU in covariate-adjusted significance with p<0.05. Data collected by BIT on 18 May - 12 June 2023.

31

All advert features significant increased the amount staked by participants aged 55+. For the same group, the "Low risk" advert also increased the proportion who played.

Among participants who were aged 55+ (N = 1,575):

Low risk to potential reward

Ease of winning

Fun-framing

No advert

Those not seeing an advert staked more than the Business as usual advert in all age categories, due to higher play rates, explained in detail [here](#).

With the exception of the low risk advert for the 55+ group, **none of the adverts affected decision to play**, regardless of age.

The **amount staked by those aged 18-34 and 35-44 was unaffected** by advert features.

Click [here](#) for full results.

⬆ Amount of tokens staked by **29 percent** (129→166)

⬆ Amount of tokens staked by **29 percent** (129→166)

⬆ Amount of tokens staked by **26 percent** (129→162)

⬆ Amount of tokens staked by **48 percent** (129→191)

⬆ proportion who decided to play by **9pp** (46%→55%)

Those who didn't play are coded as zero for total amount staked.
Exploratory subgroup analysis. Full results [here](#).
All results significant compared to the BAU in covariate-adjusted significance with p<0.05. Data collected by BIT on 18 May - 12 June 2023.
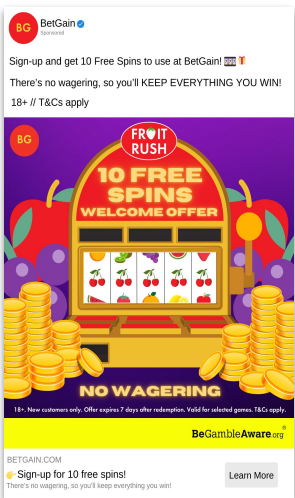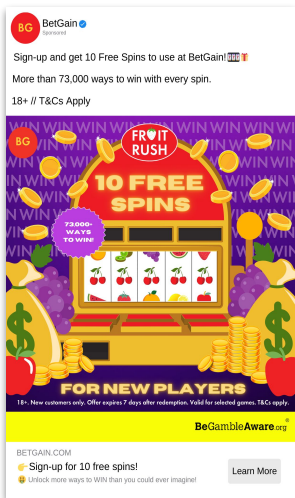
Additional findings - Recall, comprehension & attitudes

The impact of slot game advert features on recall, comprehension and attitudes.

THE
BEHAVIOURAL
INSIGHTS
TEAM

THE
GAMBLING
POLICY &
RESEARCH
UNIT

Most participants recalled seeing a slot game advert with free spins on their social media feed, but only roughly half understood you could win or lose money.

	Business as usual	Low risk to potential reward	Ease of winning	Fun-framing	No advert
% of participants who recalled…	**Full sample (N=5,975)**				
They saw a gambling advert in their news feed	73%	75%	73%	73%	12%*
	Of those recalling a gambling advert (N=5,159)				
% of participants who correctly identified the following features appeared on the advert					
The advert was for a slot game.	57%	58%	56%	56%	
The advert offered 10 Free Spins.	56%	57%	54%	56%	
It's possible to win or lose money on the game advertised.	48%	48%	48%	48%	-
% of participants who correctly identified the following features did <u>not</u> appear on the advert					
The advert said TakeTimeToThink.	12%	11%	11%	10%	-
There was a wagering requirement on the offer.	11%	19%*	10%	11%	-
Betting £1 on "Fruit Rush" would get you 94p back, on average.	22%	25%	21%	22%	-

12% of people who didn't see an advert, incorrectly said they did.

Exploratory analysis.
Between 21% and 29% said they didn't know for the middle three questions, and between 58% and 63% said they didn't know for the last three.
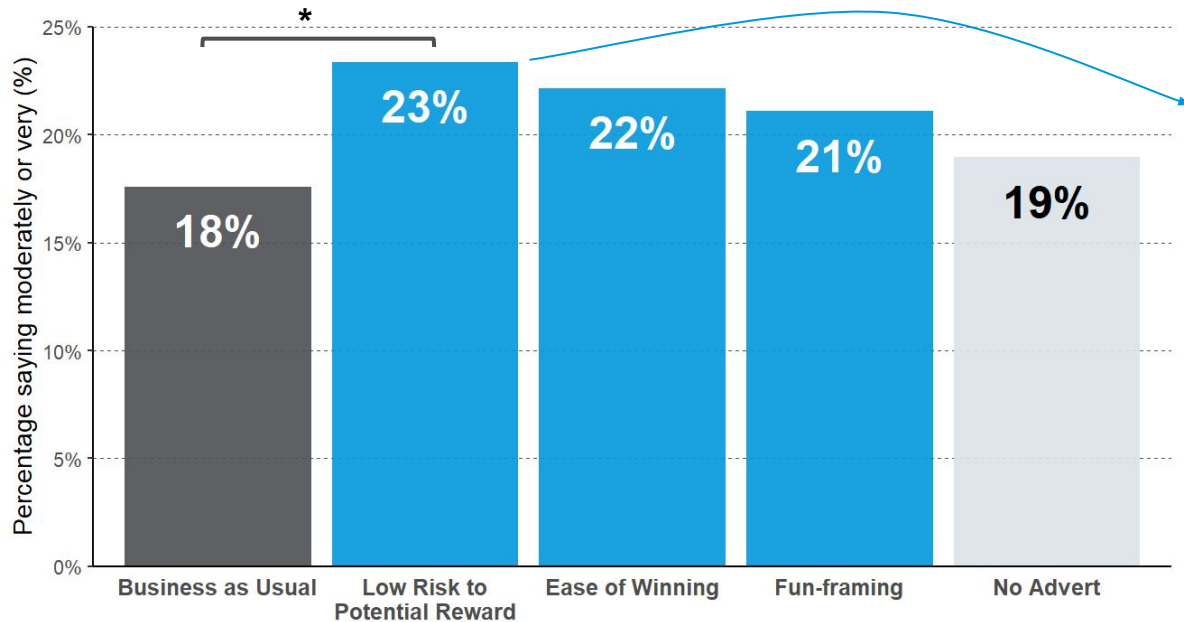*Stars and shading indicate covariate-adjusted significance with p<0.05.*
Data collected by BIT on 18 May - 12 June 2023.

34

The "Low risk" advert's features may increase the illusion of control, namely the extent to which an individual thinks they have control over uncontrollable outcomes.

"To what extent do you think your actions while playing the game advertised influence your chance of winning on the next spin?"

The "low risk" features may have increased the illusion of control, potentially due to including statements like **"There's no wagering, so you'll KEEP EVERYTHING YOU WIN"** and **"You win it you keep it".** These statements use personal pronouns ("you"), alongside verbs like "keep", which could prompt quick judgements of having more control than is objectively true.

Exploratory analysis.
Stars and shading indicate covariate-adjusted significance with p<0.05.
Data collected by BIT on 18 May - 12 June 2023.

35

When participants were asked to predict whether they would win or lose, reassuringly very few were overconfident.

% of people who played who...	Business as usual (n=695)	Low risk to potential reward (n=697)	Ease of winning (n=640)	Fun-framing (n=684)	No advert (n=324)
Thought they'd win but lost	6%	5%	3%*	5%	3%
Correctly predicted their outcomes	24%	24%	24%	25%	24%
Thought they'd lose but won	33%	32%	33%	31%	31%
Were not sure	33%	35%	35%	35%	37%
Actually broke even	4%	4%	4%	4%	5%

Losing was defined as finishing the game with less than participants started with (<110 tokens). **Winning** meant finishing with more than participants started with (>110 tokens). **Breaking even** meant finishing with exactly 110 credits.

Many **participants were too pessimistic** about their outcome. This may be as participants defined losing compared to their position once the free spins were over, rather than relative to the number of tokens they started with.

Top row is exploratory analysis, the other rows are descriptive and weren't significance tested.
Those who said they were going to play but ended up not playing were coded as 110.
Stars indicate significance compared to the BAU advert arm at p<0.05 for the top row only.
Covariates include short-form PGSI category, slot play dummy, age category, gender, region, education dummies, ethnicity, region, urban area dummy, and household income above median.
Data collected by BIT on 18 May - 12 June 2023.

Generally, few people regretted choosing to play the game and this was lowest among those who saw no advert.

% who felt regret about…	Business as usual	Low risk to potential reward	Ease of winning	Fun-framing	No advert
	Those who played Fruit Rush (N=2,981)				
Choosing to play the game	**11%**	**11%**	**13%**	**13%**	**8%***
How much money they spent	18%	18%	14%	16%	14%
How long they spent playing	12%	11%	11%	11%	9%
How much they staked on a single spin	12%	12%	11%	12%	8%*

Participants in the no-advert group may have felt less like they were 'manipulated' into playing and it was more their own choice. Alternatively, this might be due to differences in the type of people that chose to play across the different arms.

Exploratory analysis.
Stars and shading indicate covariate-adjusted significance with p<0.05.
Data collected by BIT on 18 May - 12 June 2023.

37

Additional findings - Feedback

Additional free text feedback from participants.

Among a minority that left additional feedback, they either shared positive feedback on the adverts, or suggested the adverts may appeal to vulnerable groups.

Almost 300 people used the word eye-catching, mostly positively

Business as usual
- *It's eye-catching and very alluring*
- *Colourful, eye catching, probably deceptive*
- *It's a bit boring not really eye catching*

"Low risk to potential reward"
- *I think it's very eye catching & if it appeared in my feed I would be highly likely to check it out*
- *Eye catching, colorful and engaging*
- *Very bland, colours are eye catching, but otherwise does not sell to me*

"Ease of winning"
- *Bright, colourful and eye catching.*
- *It's eye catching and intriguing*
- *Not the most eye catching slot*

"Fun-framing"
- *Love the imagery on the adverts and all the bright colours, which were and are very eye catching…*
- *Simple, bright, eye catching, stands out, colourful*
- *Not eye catching*

The "73,000+ Ways to Win on Every Spin" in the "Ease of winning" arm caught people's attention

- *73000+ ways to win is very convincing*
- *It shouldn't say win with every spin!*
- *I think the "73000 ways to win" sign would lure people in as they would think it's a sure and easy way to win money. When the reality is that they would lose money.*
- *I don't understand how there can be 73000+ ways to win.*
- *It is clearly designed to entice new gamblers onto the site in the hope of winning money.*

There was a small amount of concern about appealing to people at high-risk gambling harm and young people

- *The colours might make it appealing to children, which seems problematic (Business as usual)*
- *Though eye catching, it will appeal to the young and gamblers" ("Ease of winning")*
- *Just a boring advert for gambling addicts ("Low risk to potential reward")*
- *Colourful but slightly childlike ("Low risk to potential reward")*

Data collected by BIT on 14 March - 6 April 2022. **Blue** *shading indicates free text feedback given by participants in a treatment group.*

Appendix 1 – Policy context

We selected advert features to test by considering 1) existing advertising policy and 2) findings from our content analysis.

1	Given the focus of this study on informing future iterations of advertising policy for gambling, we consulted **The Committee of Advertising Practice (CAP)'s existing codes (16 - Gambling) and guidelines for responsible gambling advertising**[9], which state that adverts should not: 1. Mislead, namely deceive someone to make a decision to play a slot game based on a miscomprehension of that product. 2. Reference harmful gambling behaviour, including portray, condone or encourage gambling behaviour that could lead to financial, social or emotional harm.
2	Features identified in our content analysis[10] that were deemed compliant with these existing guidelines/codes, but we predicted may still mislead or promote harmful gambling, were selected for testing. We formed predictions by: 1. Shortlisting features that exploited known behavioural biases, which may increase the risk of someone being misled or gamble harmfully. 2. Conducting a deliberative ranking with external experts, to order shortlisted features from what was perceived as most to least risky. 3. Among those with top rankings, we determined which were feasible to test in an online experiment.

Appendix 2 – Methodology

Arm 1: Business as usual - **This advert was created using the most prevalent features (present in + ~50% of our sample) in our <u>contents analysis</u>.**

BG BetGain ✔
Sponsored

Sign-up and get 10 Free Spins to use at BetGain!🎰🎁
18+ // T&Cs Apply

FR🍓IT RUSH
10 FREE SPINS
FOR NEW PLAYERS
18+. New customers only. Offer expires 7 days after redemption. Valid for selected games. T&Cs apply.
BeGambleAware.org ®

BETGAIN.COM
👉Sign-up for 10 free spins!

Learn More

The advert **caption** most often contained the **incentive available** (70%, "10 Free Spins") and **incentive T&Cs** (49%, "18+ // T&Cs Apply").

The advert **header** most often contained the **incentive available** (73%, "10 FREE SPINS") .

The advert **subheader** most often contained the **incentive T&Cs** (99%, "FOR NEW PLAYERS") .

The advert **footnotes** most often contained the **incentive T&Cs** (99%, "18+. New customers only. Offers expires 7 days after redemption. Valid for selected games. T&Cs apply") .

The advert **banner** most often contained a **call to action** (98%, "Learn more") a **website URL** (96%, "BETGAIN.COM"), and the **incentive available** (53%, "Sign-up for 10 free spins!").

Arm 2: "Low risk to potential reward" - This advert made potential wins more salient than the potential risks of gambling.*

BG **BetGain** ✔
Sponsored

Sign-up and get 10 Free Spins to use at BetGain!🎰🎁

18+ // T&Cs Apply

BETGAIN.COM
👉 Sign-up for 10 free spins!   Learn More

BG **BetGain** ✔
Sponsored

Sign-up and get 10 Free Spins to use at BetGain! 🎰🎁

There's no wagering, so you'll KEEP EVERYTHING YOU WIN!

18+ // T&Cs apply

BETGAIN.COM
👉 Sign-up for 10 free spins!   Learn More
There's no wagering, so you'll keep everything you win!

The low risk to potential reward advert **caption**:
- **Emphasised the potential for a win, and downplayed potential risk** by stating 1) "There's no wagering, so you'll keep everything you win". 2) "You win it you keep it".

The low risk to potential reward advert **header, subheader, and graphic**:
- **Emphasised the potential for a win** through repeating "WELCOME OFFER" and **showing a winning reel.**
- **Downplayed the potential risk** through repeating "NO WAGERING".

The low risk to potential reward advert **banner**:
- **Downplayed the potential for risk** through repeating "There's no wagering, so you'll keep everything you win".

* This advert was included due to its prevalence in the content analysis, its position in our ranking exercise, and potential influence on perceived chances of winning.

44

Arm 3: "Ease of winning" - This advert misrepresented the chance of winning by emphasising potential control over slot game outcomes.*

BG BetGain ✓
Sponsored

Sign-up and get 10 Free Spins to use at BetGain! 🎰🎁
18+ // T&Cs Apply

BG BetGain ✓
Sponsored

Sign-up and get 10 Free Spins to use at BetGain! 🎰🎁

More than 73,000 ways to win with every spin.

18+ // T&Cs Apply

The ease of winning advert **caption** contained:
- **Incomplete information on the probability of outcomes,** by only stating the number of potential ways to win "There are over 73,000** ways to win!".

The ease of winning advert **header, subheader, and graphic**:
- **Emphasised control over outcomes** through repeating "WIN" in the background and emphasising winning outcomes through **showing a winning reel and graphical elements** in the form of coins and bags of money.

The ease of winning advert **banner**:
- **Emphasised control over outcomes** through stating "Unlock more ways to WIN than you could ever imagine!"

BETGAIN.COM
👉 Sign-up for 10 free spins!
😃 Unlock more ways to WIN than you could ever imagine!

Learn More

BETGAIN.COM
👉 Sign-up for 10 free spins!

Learn More

* This advert was included due to "mood-boosting elements" being the highest ranked feature in our ranking exercise of features conducted by internal team members and external experts. This might make individuals engaging with the advert think they have more control over the outcomes of a slot game than they actually do.
** Assuming each reel randomly selects the order each time there are ~300 trillion ways you can win. We chose 73,000 as an arbitrary large number that more closely resembles what you'd get on fixed real slots.

45

Arm 4: "Fun-framing" - This advert appealed to motivations to gamble by emphasising the mood-boosting potential of the slot game.*

BG **BetGain** ✔
Sponsored

Sign-up and get 10 Free Spins to use at BetGain! 🎰🎁

18+ // T&Cs Apply

BETGAIN.COM
👉Sign-up for 10 free spins!

Learn More

BG **BetGain** ✔
Sponsored

Feel the rush with 10 Free Spins to use at BetGain! 🎰🎁

Make your downtime epic! 😎

18+ // T&Cs Apply

BETGAIN.COM
👉 Sign-up for 10 free spins!
You're going to feel EPIC!!!

Learn More

The fun-framing advert **caption** contained:
- **An appeal to potential motives for people to gamble** by making statements that the game is **mood boosting:** "Make your downtime epic", "feel the rush".

The fun-framing advert **header, subheader, and graphic** contained:
- **Graphical elements emphasising that the game is mood boosting** in the form of fireworks and tropical characters displaying a positive mood.
- Emphasised wins through **showing a winning reel.**

The fun-framing advert **banner** contained:
- **An appeal to potential motives for people to gamble** by making statements that the game is **mood boosting:** "You're going to feel EPIC!!!".

¹* This arm was flagged as a priority in an additional consultation of the GPRU steering group, due to the potential to encourage people who do not currently gamble to register. We prioritise testing emotive/mood based motivations over a focus on socially desirable behaviours, due to this being higher placed in our ranking exercise and implemented more aggressively within the sample of adverts we reviewed.

Arm 5: Good practice - This advert combined and tested transparency based features and phrases. This advert was excluded from the analysis.

BetGain ✓
Sponsored

Sign-up and get 10 Free Spins to use at BetGain! 🎰🎁
18+ // T&Cs Apply

BETGAIN.COM
👉 Sign-up for 10 free spins!

Learn More

BetGain ✓
Sponsored

Sign-up to BetGain and get 10 Free Spins to use on the slot game, Fruit Rush. 🎰

Consider a game's odds before you decide to gamble. Players of Fruit Rush lose £7 for every £100 bet on average. This average is based on a game's lifetime, which includes millions of spins.

18+ // T&Cs apply // Set a deposit limit with BetGain // BeGambleAware

BETGAIN.COM
👉 Sign-up for 10 free spins!

Learn More

The good practice advert **caption** contained:
- **Odds information** in a simplified format including an emphasis on losses and the game's lifetime (based on findings from the odds experiment[9]).
- **Clear references to gambling** i.e. by using terms such as gamble, bet, stake (we found ⅓ of adverts didn't refer to gambling).

The good practice advert **header, subheader, and graphic** contained:
- **Clear references to gambling.**
- **Explicit 'tobacco style' risk warning.** Although in our experiment on Lower Risk Gambling Guidelines[10], (which tested these taglines in isolation - i.e. not embedded in an advert) found no specific impact, other research does support the inclusion of such messaging in the context of gambling[11].

The good practice advert **footnotes** contained:
- **Larger, salient footnotes** (rule of thumb = footnotes same size as main body).
- **Explicit safer gambling sign-posting** i.e. to a gambling management tool(kit), to a specific tool such as a deposit limit, or include the number for the National Gambling Helpline[12].

47

A Theory of Change outlines how we predicted each 1) arm would affect the 3) outcome measures, through the 2) mechanisms.

(1) Arm

These are the intervention adverts we designed to measure the impact of our prioritised slot game advert features.

Adverts with potentially risky features

Moderators

These are factors that could potentially affect the impact of slot game advert features and our outcome measures.

experience, PGSI, pre-held attitudes towards gambling

(2) Mechanisms

These are the causal chains through which we think the link between slot game advert features and our outcome measures work. They include several links which run from engaging with the adverts, to the outcome measures we are interested in.

Engages with advert

product is gambling

Subjective risk > objective risk

Engages with advert

Increased likelihood of attending to offer T&Cs → Increased understanding of offer T&Cs

Awareness of the game's odds (identifies the product is gambling) → Subjective risk = objective risk

Engages with advert

Lower likelihood of attending to offer T&Cs → Minimal understanding of offer T&Cs

May identify this product is gambling → Subjective risk < objective risk

(3) Comprehension outcome measures

This set of outcome measures examines outcomes related to participants' comprehension of advert elements and slot game mechanics.

Perceived product value (e.g. perceived odds of winning and/or perceived enjoyment from play) outweighs perceived risk and cost

(3) Behavioural outcome measures

This set of outcome measures examines outcomes related to participants' behaviour in the slot game.

We predicted understanding T&Cs and participants' perception of risk as the main mechanisms through which adverts affect gambling behaviour.

(1) Arm

Business as usual advert (control)

Good practice advert

Adverts with potentially risky features

Moderators

Demographics: Age, gender, ethnicity, socio-economic background

Gambling: gambling / slot game experience, short-form PGSI, pre-held attitudes towards gambling

(2) Mechanisms

Engages with advert

Lower likelihood of attending to offer T&Cs → Minimal understanding of offer T&Cs

May identify this product is gambling → Subjective risk ⩽ objective risk

Engages with advert

Increased likelihood of attending to offer T&Cs → Increased understanding of offer T&Cs

Awareness of the game's odds (identifies the product is gambling) → Subjective risk = objective risk

Engages with advert

Lower likelihood of attending to offer T&Cs → Minimal understanding of offer T&Cs

May identify this product is gambling → Subjective risk < objective risk

(3) Comprehension outcome measures

Perceived chance of winning money

Number of T&Cs participants understand

% of respondents who think that the choices made during the game affect your odds of winning

Perceived product value (e.g. perceived odds of winning and/or perceived enjoyment from play) outweighs perceived risk and cost

(3) Behavioural outcome measures

% of respondents who choose to play Fruit Rush

Mean stake size

Mean number of spins

Mean time between spins

# Appendix 3 – Supporting findings & commentary

Those not seeing an advert played 14pp more than our control advert. This is more likely due to experimental design than adverts reducing demand for slot games.

We hypothesise participants in the No Advert arm played more for two reasons:

1. The survey was shorter in the No Advert arm

Participants in the No Advert arm answered 3 fewer questions before the decision to play compared to the Business as usual arm (BAU), and had therefore spent an average of 59 second less in the survey before choosing to play.

Early in the experiment participants are told "*This experiment will take about 10 minutes*". Participants not viewing an advert may be less concerned about the experiment length going over that reference point and therefore more likely to play.
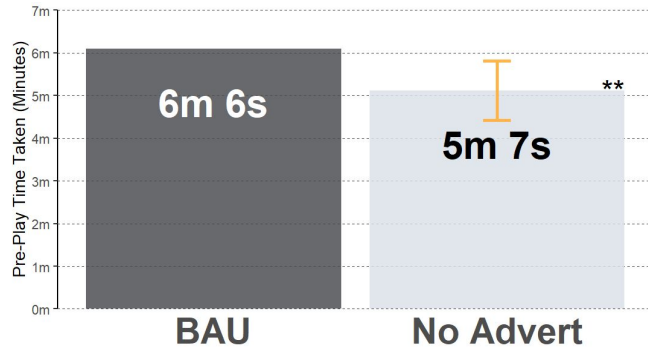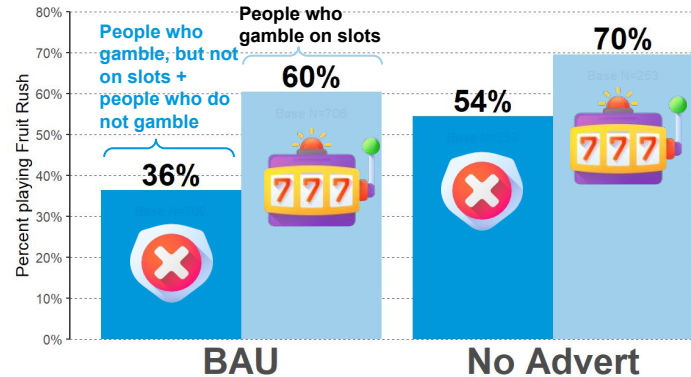

Exploratory analysis. N= 1,927.
** p<0.01, * p<0.05, + p<0.1
Standard errors are robust to heteroskedasticity.
Error bar is 95% confidence interval for treatment effect vs. control

2. The lack of information on the game led to curiosity

Participants who didn't see an advert were simply invited to play a slot game and so had very little prior knowledge. Those who **regularly play slot games** were 10pp more likely to play Fruit Rush in the No Advert group versus the BAU, compared to an 18pp increase for those who **hadn't played slots or hadn't gambled** in the previous year (p=0.09).

Those with less experience of slot games (or gambling generally) may be more curious about the game leading to larger BAU-No Advert differences.

Exploratory analysis.N= 1,927.
959 (50%) had played slots in the last 12 months.
512 (27%) were in the No-Advert arm.

Data collected by BIT on 18 May - 12 June 2023.

We have postponed testing the Good Practice arm because of a technical fault, which led to fundamentally different samples between arms.

When about 80% of data collection had been completed, we discovered an error with the odds information included in the "Good Practice" trial arm.

We wanted to recruit participants to test the corrected version of the trial arm, but had largely exhausted our usual panel provider's available pool of people who gamble.

We started recruiting from a new panel, but the participants had different demographics from our existing participants, flagging potential unobservable differences between the groups as well. In particular, they were substantially older and more educated, both of which are strong predictors of gambling behaviour.

As participants from the new panel would have mostly gone into the Good Practice arm, participants in this arm would likely have differed on both unobservable and observable characteristics from the other arm. This would have violated the fundamental assumption underpinning our ability to identify impact in randomised controlled trials.

We are considering re-running the experiment for the Good Practice arm compared to the Business as Usual arm, later in 2023.

Among those who decided to play the slot game, in-game behaviour was not affected by advert features.

| Average…	Business as usual	Low risk to potential reward	Ease of winning	Fun-framing	No advert
Of those who decided to play (n = 3732)					
Total amount staked (tokens)	304	301	305	306	296
Net Position (tokens, including free spins)	+17	+21	+22	+20	+22
Average stake size (tokens)	12	11	12	12	12
Number of spins	25	26	26	27	25
Time between spins	3.23s	3.27s	3.28s	3.19s	3.43s

Descriptive analysis.
Only those choosing to play the game are included. To the extent that different adverts induced different types of people to play, any differences may represent selection effects rather than treatment effects.
Data collected by BIT on 18 May - 12 June 2023.

Among those that chose to play the slot game, none of the features significantly increased the number of spins participants play.
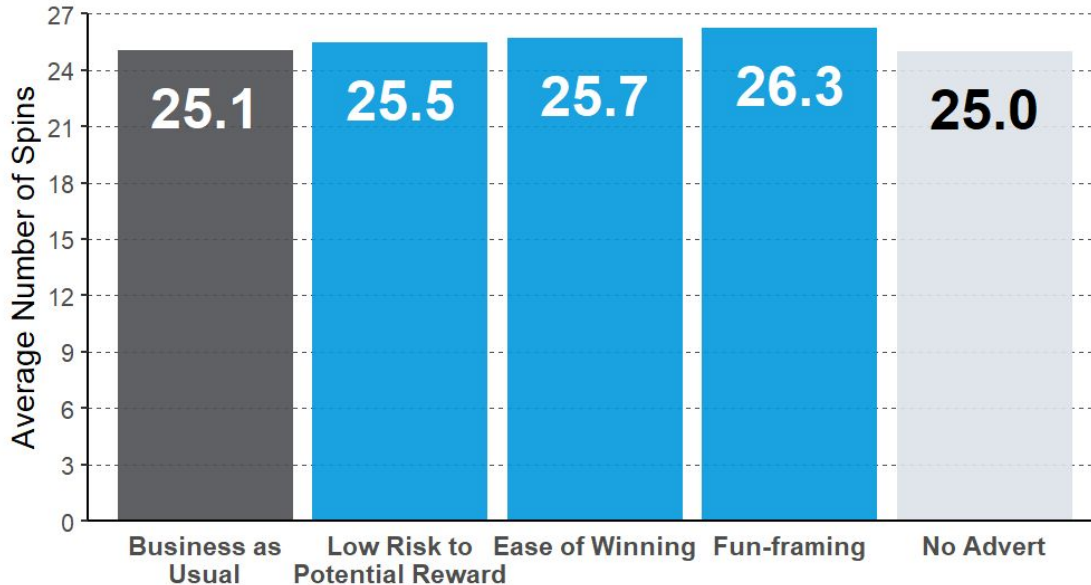
This graph shows the average amount staked by treatment arm **for those who chose to play.**

Given that those participants *chose* to play the game, this is not a random sample.

Whilst all of the adverts directionally increased the conditional amount of spins, these results were neither statistically significant nor very large.

Secondary analysis. N = 2,981 played (N=5,975 total in model) .Regression table available on the next slide.
There were no significant impacts of the treatment in a covariate adjusted zero-inflated poisson regression with R=5,000 bootstrapped percentile standard errors.Corrected for four multiple comparisons using the Benjamini-Hochberg procedure.
Only those choosing to play the game are included. To the extent that different adverts induced different types of people to play, any differences may represent selection effects rather than treatment effects.
Covariates include PGSI category, slot play dummy, age category, gender, region, education dummies, ethnicity, region, urban area dummy, and household income above median.
Data collected by BIT on 18 May - 12 June 2023.

A zero-inflated model confirmed there was little difference in number of spins among those who chose to play by treatment arm.

	Play Decision (Logistic)			Count of Spins (Poisson)		
	Coefficient	Lower 95% CI	Upper 95% CI	Coefficient	Lower 95% CI	Upper 95% CI
Business as Usual (reference)	-	-	-	-	-	-
Low-risk to Potential Reward	**-0.085**	-0.241	0.075	**0.015**	-0.063	0.089
Ease of Winning	**0.023**	-0.131	0.181	**0.019**	-0.056	0.094
Fun-framing	**-0.036**	-0.189	0.118	**0.057**	-0.021	0.130
No Advert	**-0.590***	-0.807	-0.369	**-0.017**	-0.112	0.075
Covariates included	Gender, income above median, age categories (18-34, 35-54, 55+), geographic location categories, urban location, previous person who gambles on slots, PGSI category and panel recruited from, ethnicity (BME dummy).					
Notes	N=5,975. Zero-inflated poisson model. Number of replications = 5,000. Percentile confidence intervals.					

Model explanation: The zero-inflated poisson regression (ZIP) models count data with a large number of zeros, using two separate processes. First, it assumes that there are observations - in this case participants - for which the outcome will, by definition, be zero - here, because they chose not to play and therefore have zero spins. It models the probability of this 'structural' zero. Next it models the count data among those who chose to play. These processes together produce two estimates: the probability of having a structural zero and the predicted count of spins on Fruit Rush. We focus here on the impact of treatment assignment only. We report only the treatment coefficients in both models.

Data collected by BIT on 18 May - 12 June 2023.

Advert features did not affect decision to play across risks of gambling harm. However, among those who chose to play in the high-risk group (short PGSI 4+), the low risk and ease of winning adverts increased total amount staked, while those who saw the fun-framing adverts staked less.

Average	Business as usual	Low risk to potential reward	Ease of winning	Fun-framing	No advert
Low-risk (short PGSI 1) (N =1,026)					
% of participants who decide to play	54%	54%	49%	52%	72%*
Total amount staked	190	162	165	168	221
Moderate risk (short PGSI 2-3) (N = 1,040)					
% of participants who decide to play	57%	56%	53%	57%	62%
Total amount staked	183	191	155	173	174
High risk (short PGSI 4+) (N = 576)					
% of participants who decide to play	62%	62%	59%	53%	68%
Total amount staked	132	165*	164*	114*	208*

Potential explanations for the elevated play percentages in the no advert arm are presented here.

Those who didn't play are coded as zero for total amount staked.
Exploratory subgroup analysis.
Stars and shading indicate covariate-adjusted significance compared to the BAU with p<0.05. Exploratory analysis. Data collected by BIT on 18 May - 12 June 2023.

Advert features had the biggest impact on older players (age 55+). Among those who saw the low-risk advert, more decided to play.

Average	BAU	Low risk to potential reward	Ease of winning	Fun-framing	No advert
18-34 (N =2,743)					
% of participants who decide to play	47%	46%	47%	47%	57%*
Total amount staked	131	120	122	121	146
35-54 (N = 3,027)					
% of participants who decide to play	54%	55%	50%	52%	67%*
Total amount staked	171	171	156	167	210*
55+ (N = 1,575)					
% of participants who decide to play	46%	55%*	49%	49%	68%*
Total amount staked	129	166*	166*	162*	191*

Potential explanations for the elevated play percentages in the no advert arm are presented here.

Those who didn't play are coded as zero for total amount staked.
Exploratory subgroup analysis.
Stars and shading indicate covariate-adjusted significance with p<0.05.
Data collected by BIT on 18 May - 12 June 2023.

Most people chose to play the slot game because it sounded like fun. The main reason for not choosing to play was to avoid losing money.

Why did you (not) decide to play 'Fruit Rush'? *Please select all that apply*

% choosing to *(not)* play because…	BAU	Low risk to potential reward	Ease of winning	Fun-framing	No advert
I like slot games (*I don't like slot games*)	38% (31%)	34% (30%)	35% (32%)	32% (31%)	31% (31%)
It sounds like fun (*I don't think I would enjoy the game*)	61% (19%)	55% (19%)	59% (21%)	54% (20%)	60% (14%)
I think I have a good chance of winning (*I don't think I have a good chance of winning*)	18% (37%)	18% (37%)	20% (35%)	21% (38%)	12% (23%)
I want to increase my earnings from this survey (*I don't want to lose money*)	45% (41%)	46% (39%)	48% (39%)	50% (40%)	41% (31%)
I've never played a slot game before and want to see what they are like (*I don't know enough about the game*)	19% (30%)	26% (32%)	21% (31%)	24% (31%)	21% (41%)
Other	4% (5%)	4% (5%)	2% (4%)	3% (6%)	2% (5%)

Descriptive analysis.
Data collected by BIT on 18 May - 12 June 2023.

Wagering requirements are commonly misunderstood, with just a third of participants correctly classifying a given statement as true or false.

"As far as you know, which of the following is true about wagering requirements? Please select all that apply."	% Yes, this is true	% No, this is false	% Don't Know
A wagering requirement is a condition applied to a gambling promotion that affects how you can spend the winnings generated by the promotion.(Source)	27%	47%	26% did not know whether any of the statements were true or false
A wagering requirement can be a multiplier that tells you the number of times you have to play a bonus before you are able to withdraw any winnings. (Source)	26%	48%	
A wagering requirement can be a condition applied to a gambling promotion requiring a certain amount to be staked before you can actually bet a promotion.	42%	32%	
A wagering requirement can be a time limit on a promotional offer.	26%	48%	

Green indicates the % that selected the "correct" answer (e.g. 48% correctly didn't select the last option as a wagering requirement) and red indicates the % that selected the "incorrect" answer.
Descriptive analysis.
N=5,975. Data collected by BIT on 18 May - 12 June 2023.

Online definitions of wagering requirements vary and are poorly understood. The "wagering requirements apply" statement, often seen in advert T&Cs might be confusing to the majority.

We therefore asked participants to identify whether a statement correctly described a wagering requirement; the correct statements were pulled from two different sources.

For each statement, an average of 1 in 3 participants (33%) identified the "correct" answer.

Our future research may investigate engagement with, and/or comprehension of, wagering requirements.

Appendix 4 – Endnotes

1. Committee of Advertising Practice. (2023). *Responsibility and problem gambling guidance.* https://www.asa.org.uk/static/7624bbce-868b-4cd8-9f3e32fe24b2f32a/Revised-Responsibility-and-Problem-Gambling-Guidance-final.pdf.

2. Ibid.

3. Hanss, D., Mentzoni, R. A., Griffiths, M. D., & Pallesen, S. (2015). *The impact of gambling advertising: Problem gamblers report stronger impacts on involvement, knowledge, and awareness than recreational gamblers. Psychology of addictive behaviors,* 29(2), 483.; Newall, P. W., Moodie, C., Reith, G., Stead, M., Critchlow, N., Morgan, A., & Dobbie, F. (2019). Gambling marketing from 2014 to 2018: A literature review. *Current Addiction Reports,* 6(2), 49-56.; Bouguettaya, A., Lynott, D., Carter, A., Zerhouni, O., Meyer, S., Ladegaard, I., ... & O'Brien, K. S. (2020). The relationship between gambling advertising and gambling attitudes, intentions and behaviours: a critical and meta-analytic review. *Current Opinion in Behavioral Sciences,* 31, 89-101.; Ipsos MORI. (2020). *Final Synthesis Report: The impact of gambling marketing and advertising on children, young people and vulnerable adults*. https://www.ipsos.com/sites/default/files/ct/publication/documents/2020-03/gambling-marketing-advertising-effect-young-people-final-report.pdf. Gambling Commission. (2021). *Understanding how consumers engaged with gambling advertising in 2020*. https://www.gamblingcommission.gov.uk/statistics-and-research/publication/understanding-how-consumers-engaged-with-gambling-advertising-in-2020. BIT. (2022). Comprehension of gambling odds. https://www.bi.team/wp-content/uploads/2022/05/2022-05-Comprehension-of-gambling-odds-BIT-experimental-results.pdf. McGrane, E., Wardle, H., Clowes, M., Blank, L., Pryce, R., Field, M., Sharpe, C., & Goyder, E. (2023). What is the evidence that advertising policies could have an impact on gambling-related harms? A systematic umbrella review of the literature. *Public Health.*

4. The Behavioural Insights Team (2023). *Features Used in Online Slot Game Adverts.* https://www.bi.team/publications/features-used-in-online-slot-game-adverts/

5. Ibid.

6. The Gambling Commission. (2021). *Gambling Commission announces package of changes which make online games safer by design.* https://www.gamblingcommission.gov.uk/news/article/gambling-commission-announces-package-of-changes-which-make-online-games.; Office for Improvement and Disparities & Public Health England. (2023). *Research and analysis – Gambling-related harms evidence review: summary*. https://www.gov.uk/government/publications/gambling-related-harms-evidence-review/gambling-related-harms-evidence-review-summary--2

7. Carcelén-García, S., Díaz-Bustamante Ventisca, M., & Galmes-Cerezo, M. (2023). Young People's Perception of the Danger of Risky Online Activities: Behaviours, Emotions and Attitudes Associated with Their Digital Vulnerability. *Social Sciences*, 12(3), 164. Tse, S., Hong, S. I., Wang, C. W., & Cunningham-Williams, R. M. (2012). Gambling behavior and problems among older adults: a systematic review of empirical studies. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 67(5), 639-652. Martin, F., Lichtenberg, P. A., & Templin, T. N. (2011). A longitudinal study: Casino gambling attitudes, motivations, and gambling patterns among urban elders. *Journal of Gambling Studies*, 27(2), 287-297.

8. Hanss, D., Mentzoni, R. A., Griffiths, M. D., & Pallesen, S. (2015). The impact of gambling advertising: Problem gamblers report stronger impacts on involvement, knowledge, and awareness than recreational gamblers. *Psychology of addictive behaviors*, 29(2), 483.

9. The Behavioural Insights Team. (2022). *Comprehension of gambling odds.* https://www.bi.team/wp-content/uploads/2022/05/2022-05-Comprehension-of-gambling-odds-BIT-experimental-results.pdf

10. The Behavioural Insights Team. (2022). *Lower-risk gambling guidelines.* https://www.bi.team/wp-content/uploads/2022/09/FINAL-BIT-experiment-results-Lower-risk-gambling-guidelines.pdf

11. Hall & Partners. (2022). *Phase II: DSS gambling tagline testing and implementation*. https://www.dss.gov.au/sites/default/files/documents/09_2022/phase-ii-dss-gambling-tagline-testing-and-implementation-publishable-hxall-and-partners-report-2022.pdf

12. Newall, P. W., Hayes, T., Singmann, H., Weiss-Cohen, L., Ludvig, E. A., & Walasek, L. (2023). Evaluation of the 'take time to think' safer gambling message: a randomised, online experimental study. *Behavioural Public Policy*, 1-18.

THE BEHAVIOURAL INSIGHTS TEAM

PREDICTIV

Get in touch:

Lauren Leak-Smith
Senior Policy Advisor
lauren.leak-smith@bi.team

Tom van Zantvliet, Associate Advisor
Elena Meyer du Brickwedde, Research Advisor
Louis Shaw, Associate Research Advisor

This work was quality assured by:

Ruth Persian, Principal Advisor
Dr. Bobby Stuijfzand, Head of Online Experiments and Data Science
Dr. Tom O'Keeffe, Senior Research Advisor