Psychology of Addictive Behaviors

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# Positive Emotional Harm Prevention (Safer) Gambling Messages: Results of an Online Experiment

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***Objective:*** The United Kingdom is set to replace gambling industry slogans such as "gamble responsibly" with independently designed messages. One of the seven independently designed Australian messages is a positive emotional message, intended to leverage positive feelings to enact behavioral change. This study sought to compare this and other proposed positive emotional messages against novel alternatives. ***Method:*** U.K.-based gamblers ($N$ = 4,204) rated 10 positive emotional messages on four Likert scales (e.g., "this message makes me want to gamble less"; "this message is relevant to me") and provided free-text responses. Participants also completed the Problem Gambling Severity Index to explore how message ratings varied with levels of gambling harm. ***Results:*** Two novel messages highlighting the positive impacts of not gambling on relationships and happiness scored the best when ratings were averaged across the four Likert scales. Messages appeared better suited to those who are experiencing gambling harms: Participants with nonzero Problem Gambling Severity Index scores reported consequently wanting to gamble less, and messages appeared relevant to participants with Problem Gambling Severity Index scores of 8+. Analysis of free-text comments revealed that only one message, based on a message used in New South Wales, Australia, yielded a positive average sentiment from participants ("You're stronger than you think. Take the first step and speak to someone today"). Some participants perceived a judgmental or guilt-inducing tone from messages. ***Conclusions:*** While existing Australian positive emotional messages scored well, some novel alternatives may perform even better. Positive emotional messages appear best suited for audiences who are already experiencing substantial gambling harms.

***Public Health Significance Statement***
This study showed how positive emotional gambling harm preventions can be evaluated and their effectiveness thereby potentially improved over time.

*Keywords:* gambling messaging, responsible gambling, behavior change, behavioral addictions, public health messaging



Sally M. Gainsbury served as action editor.

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The preregistration, full supplementary results, code, data, and materials are available from Newall, Weiss-Cohen, van Baal, et al. (2025).

Philip Newall was a member of the Advisory Board for Safer Gambling from 2021 to 2025, which was an advisory group of the Gambling Commission in Great Britain. In the last 3 years, Philip Newall has been a named researcher on projects funded by the Academic Forum for the Study of Gambling (AFSG), Alberta Gambling Research Institute, British Academy/Leverhulme, Canadian Institute for Health Research, Clean Up Gambling, Gambling Research Australia, and Victorian Responsible Gambling Foundation. In relation to the past 3 years, Leon Y. Xiao has been providing paid consultancy for Public Group International Ltd. (trading as Public; Companies House No. 10608507), which has been commissioned by the U.K. Department for Culture, Media and Sport to conduct independent research on understanding player experiences of loot box protections (October 2024–Present). Leon Y. Xiao undertook a brief period of voluntary work experience at Wiggin Limited Liability Partnership (Solicitors Regulation Authority No. 420659) in London, England, in August 2022. Leon Y. Xiao has contributed and continues to contribute to research projects that were enabled by data access provided by the video game industry, specifically Unity Technologies (October 2022–Present). Leon Y. Xiao has been invited to provide advice to the U.K. Department for Digital, Culture, Media and Sport and its successor (the Department for Culture, Media and Sport) on the technical working group for loot boxes and the Video Games Research Framework. Leon Y. Xiao has received honoraria from the Center for Ludomani for contributing parent guides about mobile games for https://Tjekspillet.dk, which is funded by the Danish Ministry of Health's gambling addiction pool (Sundhedsministeriets Ludomanipulje; March and December 2023); from the Fundació Pública TecnoCampus Mataró-Maresme (TecnoCampus Mataró-Maresme Foundation) for a guest lecture (November 2023); and from the Young Men's Christian Association of Greater Toronto Youth Gambling Awareness Program for a presentation, which is funded by the Government of Ontario, Canada (March 2024). Leon Y. Xiao received royalties by virtue of the copyright subsisting in some of his publications from the Authors' Licensing and Collecting Society (Companies House No. 01310636; March 2023 and 2024). A full gifts and hospitality register-equivalent for Leon Y.

*continued*

Policymakers are increasingly looking to replace ineffective gambling industry slogans, such as "gamble responsibly" (Lole et al., 2019; Newall et al., 2022; Newall, Hayes, et al., 2023), with a range of independently designed harm prevention messages (Butler, 2022; Department for Culture, Media and Sport, 2023). Having a large number of effective messages to rotate between appears important for this, both to prevent message fatigue (McCullock et al., 2025) and to appeal to different groups (Gaudett et al., 2025; Newall, Rockloff, Hing, Thorne, et al., 2023; Ray et al., 2024). This last finding mirrors previous developments in cigarette warnings, where "Smoking causes impotence" might be effective on a different group of smokers than "Smoking causes ageing of the skin." Smoking also shows that any messaging approach is likely to be successful when health promotion messages predominate compared to the progambling messages that predominate in industry marketing (Henriksen, 2012; Wakefield et al., 2010).

Seven independently designed messages are currently used nationally across Australia, which use three distinct communication strategies (Chapman & Priestly, 2022). Three messages warn gamblers about the likelihood of loss (e.g., "Chances are you're about to lose"). Three messages help gamblers to self-appraise gambling behaviors (e.g., "Think. Is this a bet you really want to place?"). The last national Australian message highlights the positives inherent in not gambling: "Imagine what you could be buying instead." This is an example of a positive emotional message, a type of behavior change intervention that has shown some promise in public health and that deserves further detailed study in gambling (Newall, Rockloff, Hing, Browne, et al., 2023).

The potential effectiveness of positive emotional messages can be understood through established frameworks, such as the capability, opportunity, motivation, and behavior model (Michie et al., 2011), which identifies *capability*, *opportunity*, and *motivation* as key components in behavior change. Positive emotional messages may primarily target the *motivation* component by enhancing psychological motivation through positive affect (Mersha et al., 2020; Vasiliou et al., 2021) while simultaneously building *capability* by strengthening self-efficacy beliefs, which represent individuals' confidence in their ability to control their own behavior (Brinken et al., 2025; Kinchen et al., 2022; Teng et al., 2019). This aligns with the Theoretical Domains Framework, where positive emotional messaging could influence the motivation domain to eventually enhance capability through improved behavioral regulation skills (Atkins et al., 2017; McGowan et al., 2020).

Positive emotional messages can therefore be seen in public health as making recipients more receptive to a message and to its recommended behavior (Guan & Monahan, 2017). In alcohol, positive emotional messages (e.g., "You can still go and party, just go a bit easier and get full value out of your weekend") were found in one study to be more effective than more negative warnings about harm (e.g., "You have more fun when you don't drink too much and can remember the whole night"; Previte et al., 2015). Other research has found converging evidence for the positive emotion gratitude's



Xiao is available at https://sites.google.com/view/leon-xiao/about/gifts-and-hospitality-register. The up-to-date version of Leon Y. Xiao's full conflicts of interest statement beyond the last 3 years is available at https://sites.google.com/view/leon-xiao/about/conflict-of-interest. Archie Spicer has no disclosures to report.

Leon Y. Xiao was the (co)recipient of three AFSG Postgraduate Research Support Grants (March 2022, January 2023, and July 2024) and a Minor Exploratory Research Grant (May 2024) that were derived from "regulatory settlements applied for socially responsible purposes" received by the U.K. Gambling Commission and administered by Gambling Research Exchange Ontario (GREO) and its successor (GREO Evidence Insights; GREO). Leon Y. Xiao has accepted funding to publish academic articles open access from GREO and the AFSG that was received by the U.K. Gambling Commission as above (October, November, and December 2022; November 2023; and May 2024). Leon Y. Xiao was the recipient of an Elite Research Travel Grant 2024 (EliteForsk-rejsestipendium 2024) awarded by the Agency for Higher Education and Science of the Danish Ministry of Higher Education and Science (Uddannelses- og Forskningsstyrelsen under Uddannelses- og Forskningsministeriet; February 2024). Leon Y. Xiao has accepted conference travel and attendance grants from the Socio-Legal Studies Association (February 2022 and February 2023); the Current Advances in Gambling Research Conference Organising Committee with support from GREO (February 2022); the International Relations Office of the Jagiellonian University (Uniwersytet Jagielloński), the Polish National Agency for Academic Exchange (Narodowa Agencja Wymiany Akademickiej), and the Republic of Poland (Rzeczpospolita Polska) with cofinancing from the European Social Fund of the European Commission of the European Union under the Knowledge Education Development Operational Programme (May 2022); the Society for the Study of Addiction (November 2022 and March 2023); the organizers of the 13th Nordic (Stiftelsen Nordiska Sällskapet för Upplysning om Spelberoende; the Nordic Society Foundation for Information about Problem Gambling) Conference, which received gambling industry sponsorship (January 2023); the Prince Mohammed bin Salman bin Abdulaziz Foundation (November 2023); and the U.K. Gambling Commission (March 2024). Philip Newall has received honoraria for reviewing from the AFSG and the Belgium Ministry of Justice, travel and accommodation funding from the Alberta Gambling Research Institute and the Economic and Social Research Institute, and open access fee funding from the AFSG, GREO Evidence Insights, and the University of Bristol. Leonardo Weiss-Cohen has received open access fee funding from GREO. Simon T. van Baal has received research funding from the AFSG. Jamie Torrance has received, in the last 3 years, open access publication funding from GREO, conference travel and accommodation funding from the AFSG, a minor exploratory research grant from the AFSG and GREO, Seed Grant funding from the International Centre for Responsible Gambling, and studentship funding from the Economic and Social Research Council. Maira Andrade has received travel and accommodation funding from the Society for the Study of Addiction and the AFSG. Maira Andrade has also received a postgraduate research grant from the AFSG and open access fee funding from GREO Evidence Insights.



Philip Newall played a lead role in conceptualization, project administration, writing–original draft, and writing–review and editing. Leonardo Weiss-Cohen played a lead role in formal analysis and an equal role in conceptualization and writing–review and editing. Simon T. van Baal played a lead role in formal analysis and an equal role in conceptualization and writing–review and editing. Jamie Torrance played an equal role in conceptualization and writing–review and editing. Maira Andrade played an equal role in conceptualization and writing–review and editing. Archie Spicer played an equal role in conceptualization and writing–review and editing. Leon Y. Xiao played an equal role in conceptualization and writing–review and editing.

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effect in promoting smoking behavior change (K. Wang et al., 2024). In a gambling context, goal-relevant episodic future thinking may be particularly relevant, as messages such as "Imagine what you could be buying instead" could trigger vivid mental simulations of positive future scenarios. This cognitive process may lead to changes in motivation by reducing present orientation and increasing consideration of longer term consequences (Benoit et al., 2011; Peters & Büchel, 2010).

Although some research has explored negative fear-based warnings in gambling (Mutti-Packer et al., 2022), clinicians have contrastingly recommended positive emotional messages, given the shame and secrecy often inherent to gambling harms (Newall, Rockloff, Hing, Browne, et al., 2023). As they focus on the benefits of not gambling, positive emotional messages might be most effective on people who are already experiencing substantial gambling-related harms. By contrast, likelihood of loss messages were in one study seen as being personally relevant on average to gamblers with Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001) scores of 5 or above (Newall, Weiss-Cohen, Petrovskaya, et al., 2025). If positive emotional messages are only seen as personally relevant to people with even higher PGSI scores, then this suggests that they might work best if implemented particularly in high-risk settings, such as on products like electronic gambling machines that are strongly associated with harm (Allami et al., 2021).

Although a systematic study of existing and proposed positive emotional messages was beyond the scope of this study, we are aware of one other positive emotional message that has been used regionally in the Australian state of New South Wales: "You're stronger than you think. Take the first step and contact Gambling Help today" (Department of Customer Service, 2020). It therefore made sense to compare these existing messages from another jurisdiction against other messages. Harris et al. (2018) were the first authors we are aware of to propose positive emotional gambling messages, but the single message they proposed was not subject to any empirical evaluation. Davies et al. (2022) tested six distinct messages, one of which fits our definition of a positive emotional message: "The fear of talking about gambling problems is often worse than the reality" (p. 40). This message was rated by participants as being more relevant to people experiencing harm than any of the other existing or novel messages—which did not leverage positive emotions—tested in that study. Rockloff et al. (2024) explored nine positive emotional messages; however, these did not have a significant impact compared to control messages on the study's main dependent variable of self-reported gambling expenditure over 8 weeks. But these null findings may be due to the relatively small effect sizes from messaging combined with the noise inherent in self-reported gambling expenditure (Heirene et al., 2022; Wood & Williams, 2007).

Harm prevention gambling messages can be evaluated via multiple methodologies. Randomized controlled trials and incentivized gambling tasks can explore either real or incentivized gambling behaviors as outcomes. However, as the effects of message content can be relatively small (Auer & Griffiths, 2015; Heirene & Gainsbury, 2021), both of these methodologies require large sample sizes to achieve adequate statistical power, making them inefficient at testing larger groups of candidate messages. Messages can also be evaluated qualitatively, for example, via focus groups (Houghton et al., 2023; Mills et al., 2023), but this methodology is inherently subjective. Many studies have therefore evaluated messages using hypothetical self-report ratings (Davies et al., 2022; Newall, Torrance, et al., 2024; Newall, Weiss-Cohen, Petrovskaya, et al., 2025), and this was in fact the methodology used to select the current Australian messages (Chapman & Priestly, 2022). Hypothetical self-reported ratings can also be used to explore differences across the spectrum of harm as measured by the PGSI (Ferris & Wynne, 2001). However, this methodology requires the selection of appropriate dependent measures to be robust.

A recent self-report study on likelihood of loss messages used four dependent measures across a large sample of U.K. gamblers, which were assessed individually and also averaged to create an overall ranking (Newall, Weiss-Cohen, Petrovskaya, et al., 2025). The tobacco warning literature suggests that perceived message effectiveness can predict actual behavioral impact (Noar et al., 2020). Participants were therefore asked whether they agreed with the statement "This message makes me want to gamble less," a statement that they on average agreed to for each message. The study also asked whether participants agreed with "This message is relevant to me" and "This message is relevant to people experiencing gambling harms." Messages were seen as being relevant to people experiencing gambling harms but not relevant to the average participant. However, 66% of those participants were no- or low-risk gamblers, and messages were viewed as being more personally relevant by participants with higher PGSI scores. We therefore sought to assess the impact of positive emotional messages using the same well-tested analyses.

With the present study, we also intended to include a new measure testing a unique way in which positive emotional messages might not be effective. We initially thought that since positive emotional messages are meant to utilize positive emotion to make recipients more receptive to the message, an appropriate measure could be "This message makes me feel bad." However, discussion with a person with lived experience of gambling harm suggested that momentary bad feelings could in fact lead to positive help-seeking behaviors, an observation that is consistent with findings from the help-seeking literature (Wieczorek & Dąbrowska, 2018). We will therefore use a simple measure of potential ineffectiveness used in another previous study: "I don't like this message" (Chapman & Priestly, 2021).

Finally, participants were provided with an opportunity to enter voluntary text-based feedback on each message. This feedback was subjected to a sentiment analysis to see whether each message was responded to positively or negatively and a topic modeling analysis to explore the key theme underlying the feedback for each message. This study involves 10 positive emotional messages, a greater number of messages than has been included in any previous study (Davies et al., 2022; Rockloff et al., 2024), where they were also subject to a range of in-depth analyses. This is therefore the most detailed exploration of positive emotional messages to date and is intended as an important stepping stone in the international shift away from industry-developed messages. The detection of well-performing messages can in time guide future research aiming to explore which types of messages work best overall and which work best for specific audiences.

*Research Aim 1:* Messages will be tested against each other and against the scale midpoint for each of the four dependent measures.

*Research Aim 2:* Messages will be ranked on overall performance by first ranking each message from best to worst on each of the four dependent measures and then calculating each message's multidimensional average rank (reverse scoring the "I don't like this message" measure).

*Research Aim 3:* For each message and rated dimension, an interaction model will be run to see if the message's rating depends on participants' PGSI scores.

*Research Aim 4:* The overall sentiment and top topic underlying each message's voluntary feedback will be explored. Additionally, the deeper meaning and implicit attitudes will be explored through interpretative qualitative analysis.

## Method

The preregistration, full supplementary results, code, data, and materials are available from Newall, Weiss-Cohen, van Baal, et al. (2025). Ethical approval was obtained from the University of Bristol School of Psychological Science Research Ethics Committee No. 26037.

### Participants

Participants ($N = 4,204$) were recruited online via Prolific and paid £1 each for their participation (mean duration 9.1 min; £6.59 per hour *pro rata*). Eight other participants were excluded by applying our preregistered criteria: four for self-reported careless responding and the other four for completing the study in under 2 min. Prolific's quota sampling feature was used to obtain a gender-balanced sample that was 49.5% female and 50.5% male (see Table 1 for further demographics). To be eligible, potential participants had to be residents in the United Kingdom, aged 18 or over ($M = 39.7$, $SD = 12.0$), and have previously reported to Prolific engagement with at least one nonlottery and nonbingo gambling format (Table 2), as people who only engage in those two gambling formats tend to be at lower risk of harm (Allami et al., 2021). Participants scored an average of 3.4 ($SD = 4.7$) on the PGSI (Ferris & Wynne, 2001), a widely used measure of gambling-related harm. Overall, 33.0% were in the no-risk category (PGSI = 0), 27.2% were in the low-risk category (PGSI = 1 or 2), 25.2% were in the medium-risk category (PGSI = 3–7), and 14.6% were in the high-risk category (PGSI = 8+). This is consistent with previous observations that online samples tend to have higher average risk levels than the general population (Russell et al., 2021).

**Table 1**
*Demographic Characteristics of the Recruited Participants*

| Demographic category | *N* (%) |
|---|---|
| Ethnicity | |
| White | 3,561 (84.7) |
| Black | 232 (5.5) |
| Asian | 241 (5.7) |
| Mixed | 135 (3.2) |
| Other | 32 (0.8) |
| Not available | 3 (0.1) |
| Employment status | |
| Full-time | 2,300 (54.7) |
| Part-time | 570 (13.6) |
| Not in paid work | 256 (6.1) |
| Unemployed and job seeking | 138 (3.3) |
| Starting soon | 14 (0.3) |
| Other | 97 (2.3) |
| Data not available | 829 (19.7) |

**Table 2**
*Online Gambling Formats Engaged in by the Recruited Participants*

| Gambling format[a] | *N* (%) |
|---|---|
| Lottery[b] | 2,698 (64.2) |
| Slots | 2,479 (59.0) |
| Bingo[b] | 2,195 (52.2) |
| Blackjack | 1,890 (45.0) |
| Roulette | 1,817 (43.2) |
| Poker | 1,659 (39.5) |
| Race/sports betting | 1,465 (34.8) |
| Virtual sports betting | 1,285 (30.6) |
| Video poker | 519 (12.3) |
| Pachinko | 186 (4.4) |
| Baccarat | 166 (3.9) |
| Craps | 156 (3.7) |

[a] Participants could choose more than one format. [b] Participants who played only lottery or bingo were not allowed to complete the study, but these participants played lottery and bingo in addition to another format.

### Materials

We chose 10 messages for this study, which are all shown in Table 3. First, two existing messages implemented in Australia were included. "Imagine what you could be buying instead" (abbreviated to *imagine what* hereinafter) is one of the seven independently designed messages currently in use nationally (Chapman & Priestly, 2022). The second message, used only regionally in New South Wales, a state of Australia, is "You're stronger than you think. Take the first step and contact Gambling Help today" (Department of Customer Service, 2020; abbreviated to *stronger than* hereinafter). The last four words of this message were changed to "speak to someone today" to reduce potential confounds from mentioning a specific, likely nonapplicable Australian help service (the full text of all messages tested is shown in Table 3).

We also used three messages that have been proposed in previous literature. "Save the rest of your money for that family trip next month" (abbreviated to *family trip* hereinafter) was proposed in an early conceptual article (Harris et al., 2018, p. 271). "The fear of talking about gambling problems is often worse than the reality" (abbreviated to *fear talking* hereinafter) was rated as being more appropriate for people experiencing harm than any of the other types of messages tested in a self-report study (Davies et al., 2022, p. 40). This message was edited in this study to use the term "gambling harms" instead of the more stigmatizing term "gambling problems" (Biggar & Wardle, 2024). "Think of all the money you'll save if you gamble less" (abbreviated to *money save* hereinafter) ranked second highest on self-report ratings of helpfulness and understanding, just after a similar message to the one used above mentioning "your family" (Rockloff et al., 2024, p. 8). As this message only recommends gambling *less*, a goal that could be achieved without having any tangible impact on harm, we changed "if you gamble less" to "by not gambling" in this study. This is arguably more

**Table 3**
*The 10 Positive Emotional Messages Used in This Study*

| Message | Abbreviation | Novel message? |
|---|---|---|
| Imagine what you could be buying instead. | *Imagine what* | No |
| You're stronger than you think. Take the first step and speak to someone today. | *Stronger than* | No |
| Save the rest of your money for that family trip next month. | *Family trip* | No |
| The fear of talking about gambling harm is often worse than the reality. | *Fear talking* | No |
| Think of all the money you'll save by not gambling. | *Money save* | No |
| Every day without gambling makes you stronger. | *Every day* | Yes |
| Quitting gambling can help you with the relationships that matter the most to you. | *Relationships* | Yes |
| Don't gamble on your happiness: Do something else that will make you happy today. | *Happy today* | Yes |
| You're not you when you're gambling: Find the real you again. | *Real you* | Yes |
| Celebrate life's real wins. Don't let gambling overshadow them. | *Celebrate life* | Yes |

*Note.* Italic formatting indicates use of a two-word label to refer to a longer message.



appropriate for high-risk gamblers and also makes the message more in keeping with the other messages tested here.

Five novel messages were also created using input from people who have experienced gambling-related harm. Online self-help forums are one place where gamblers experiencing harm write about their experiences, and these anonymous public data sets can be subject to various analyses (Bradley & James, 2020; Rodda et al., 2018; van der Maas et al., 2022). One natural language processing analysis of posts from the U.K.-based GamCare forum revealed a distinct topic of positive and uplifting stories about recovery (Van Baal et al., 2025). The top 50 posts related to this topic were reviewed by the research team, and particularly, positive sentiments were turned into novel messages. As researchers might inadvertently propose inappropriate content, two people with lived experience of gambling harm who are now active in the recovery/advocacy space were invited to review the proposed messages (Jenkins et al., 2024). This process led to changes to make messages either less triggering or more uplifting and also led to the cocreation of a new message: "You're not you when you're gambling: Find the real you again" (abbreviated to *real you* hereinafter).

For each message, participants had to rate their agreement with the four following statements, used as dependent variables, on 7-point Likert scales:

- I do not like this message.
- This message makes me want to gamble less.
- This message is relevant to me.
- This message is relevant to people experiencing gambling harms.

Participants could also provide free-text responses to each message. Specifically, we instructed them, "Feel free to enter any thoughts that you might have on this message." The ordering of messages and measures was also randomized within this block.

Finally, participants had an opportunity to provide overall study feedback and then answer a self-reported carelessness check, where participants who responded "No, I was not paying attention, discard my data" had their data excluded (Brühlmann et al., 2020).

## Procedure

Participants were presented with two blocks presented in a random order: the PGSI block and the message rating block. The ordering of the 10 messages was also randomized within the message rating block.

## Statistical Analysis

For Research Aim 1, four separate mixed-effects models were run, one for each dependent variable. There were two fixed predictors: message, which was a factor identifying each message, and message order, which identified the order in which each message was presented to each participant, as well as their interaction. The model also contained one random intercept for each participant. As preregistered, a random slope for message order was not included as the models either failed to converge with a random slope or had random slope variance close to zero ($\approx$0.005).

Using message order as a covariate controlled for order effects, therefore effectively comparing the messages against each other when presented as the first message seen. Because of the four dependent variables being analyzed, we used a base confidence level ($\alpha$) of $p < .01$ to reduce the potential for Type I error inflation. Compact-letter-displays (CLD) were used to identify different groupings of similarities using pairwise comparisons across the 10 messages, further corrected for multiple comparisons using the Sidák method. This correction resulted in an adjusted confidence level of $p < .00022$ for significance. This model was also used to evaluate if each answer was significantly different from 4, which is the neutral response, correcting for multiple comparisons, with an adjusted confidence level of $p < .001$ (due to the lower number of tests).

For Research Aim 2, messages were ranked on overall performance by first ranking each message from best to worst on each of the four dependent measures and then calculating each message's multidimensional average rank (reverse scoring the "I don't like this message" measure).

For Research Aim 3, we added mean-centered PGSI scores as a covariate (with two-way interactions) to each of the four models above and tested the effects of PGSI scores via a significant main effect and interaction with the fixed factor (message). To evaluate how PGSI affected each message individually, we tested the slope of PGSI score interaction for each message against zero and presented a CLD table identifying different groups of similarities in the slope of the PGSI interaction using pairwise comparisons across the 10 messages, both corrected for multiple comparisons with the same method explained above.

For Research Aim 4, we preregistered standard text preprocessing steps: text cleaning (lowercasing and removing punctuation, digits/special characters, and extra line space), tokenization, lemmatization, removing stop words, and spelling correction. We conducted sentiment analysis using open-source models from Hugging Face (Hartmann et al., 2021). This model is capable of classifying sentences and paragraphs into three classes: positive, neutral, and negative. The neutral category is useful because it often contains more technical information and creates a division between sentiment-rich and sentiment-poor content. Performance was better without the text cleaning steps, which is common for sentence-transformer models, so we fed it the already fairly low-noise responses after conservative filtering of responses (e.g., variations of "N/A," "none," "P," and " ").

For the topic modeling, we also left out these preprocessing steps for the same reasons, but we removed excessively short comments (<3 words). Considering the brevity of responses (character length per response: $Mdn = 63$, $M = 77.27$, $SD = 62.92$), we used BERTopic (Grootendorst, 2022), which is better suited to short documents, such as open-text responses to questions, because classical models, like latent Dirichlet allocation, typically rely on word co-occurrence within documents to cluster them. With shorter participant responses, the low number of co-occurring words will present a barrier for the model to produce coherent topics. BERTopic avoids this issue due to its reliance on embeddings to represent the meaning of pieces of text. These multidimensional vectors then undergo dimensionality reduction (akin to principal component analysis, usually using Uniform Manifold Approximation and Projection; McInnes et al., 2020) before they are clustered, avoiding the reliance on word co-occurrence. We achieved the highest adherence scores and the most interpretable topics using the following approach. We used the Uniform Manifold Approximation and Projection dimensionality reduction algorithm with 10 neighbors, which allows for a more fine-grained pattern recognition. For our clustering algorithm, we used the Hierarchical Density-Based Clustering for Applications with Noise (McInnes et al., 2017), restricting the minimum cluster size to 25, with five minimum samples. We then initialized our BERTopic model with a maximum N-gram length of two (e.g., "New York") and used the "all-MiniLM-L6-v2" as the embedding model (W. Wang et al., 2020).

To complement our topic modeling approach, we conducted a semantic thematic analysis on the 50 most representative comments from each message's primary topic cluster (Braun & Clarke, 2006). This surface-level approach focuses on manifest content rather than latent meanings, making it well-suited for brief online responses (Terry et al., 2017). We adopted a deductive coding framework with each message serving as a distinct main theme and then identified subthemes across participant responses regarding perceived message effectiveness and relevance. This methodology has proven effective for similar digital communication data (Conti et al., 2024; van den Haspel et al., 2022; Voroshilova & Pesterev, 2021). Regular team meetings were conducted to ensure consistency within the analysis and pertinence to our research aims.

## Results

### Research Aim 1: Differences Between Each Message

Outcomes for Research Aim 1's four dependent variables are shown in Figure 1. Figure 1A shows results for the "I don't like this message" dependent variable, where it can be seen that all 10 messages were significantly below the scale midpoint of 4—showing that participants did not express negative sentiments toward any message on average. However, there was still variation between the messages, with *real you* scoring worst ($M = 3.62$) and *stronger than* scoring best ($M = 2.94$). The CLD placed the messages into six groups that did not differ significantly from each other, with some messages being in three separate groups (*celebrate life*, *family trip*, and *every day*). This suggests that messages tended to be quite similar to each other on this dependent variable.

Figure 1B shows results for the "makes me want to gamble less" dependent variable, where *relationships* scored best ($M = 4.44$) and *fear talking* scored worst ($M = 3.69$). Overall, six messages were significantly above the scale midpoint of 4 (*relationships*, *imagine what*, *money save*, *happy today*, *family trip*, and *celebrate life*) and were grouped together by the CLD. Next, three messages were not significantly different from the scale midpoint of 4 (*every day*, *stronger than*, and *real you*) and were also grouped together by the CLD. *Fear talking* was the only message that was significantly below the scale midpoint. Although the range of variation was similar on this dependent variable (0.75 scale points) to the previous one (0.68 scale points), messages were more clearly defined in terms of distinct groups of somewhat effective and ineffective messages.

Figure 1C shows results for the "relevant to me" dependent variable. Only two messages did not differ significantly from the scale midpoint and were grouped together by the CLD: *Imagine what* ($M = 3.94$) and *money save* ($M = 3.86$). All eight other messages were significantly below the scale midpoint and were placed into a further three groups by the CLD. The worst message on this dependent variable was *real you* ($M = 2.92$). While there was a variability range of 1.02 scale points on this dependent variable, none of the messages were seen as being relevant to participants on average, a majority of whom had PGSI scores between 0 and 2. Research Aim 3's results below will show how this changed as PGSI scores increased.

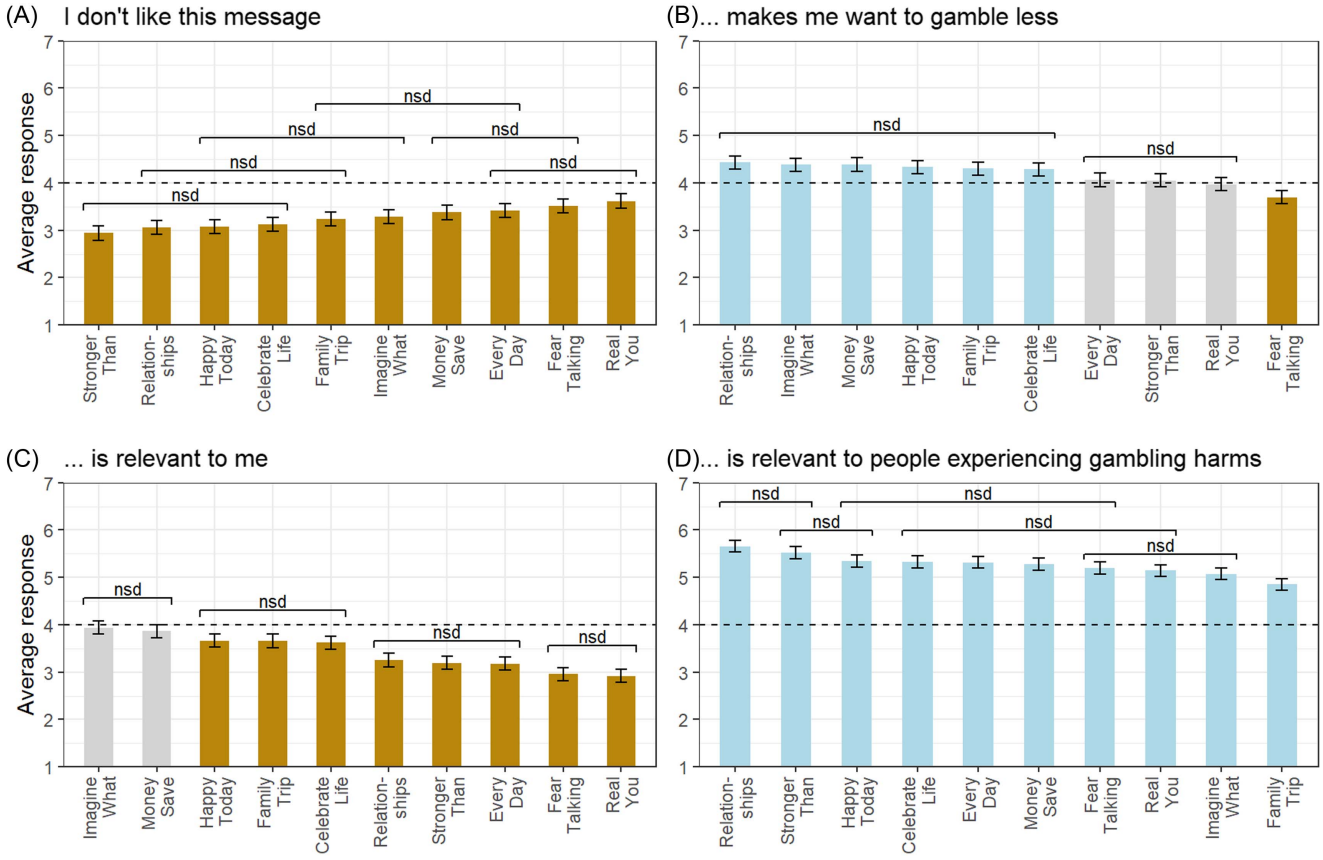
Figure 1D shows the "relevant to people experiencing gambling harms" dependent variable, where all 10 messages were significantly above the scale midpoint. *Relationships* again scored best ($M = 5.66$), and *family trip* scored worst ($M = 4.85$)—a variability range of 0.81 scale points. The CLD showed multiple overlapping groups, with seven messages being in at least two CLD groups.

### Research Aim 2: Overall Message Ranking

Table 4 ranks the 10 messages according to the preregistered methodology, showing that two novel messages scored the best: "Quitting gambling can help you with the relationships that matter the most to you" (*help relationships*, $M = 2.5$) and "Don't gamble on your happiness: Do something else that will make you happy today" (*happy today*, $M = 3.25$). The best of these novel messages scored an average ranking of two messages higher than the two positive emotional messages based on messages used in Australia: "Imagine what you could be buying instead" (*imagine what*, $M = 4.5$) and "You're stronger than you think. Take the first step and speak to someone today" (*stronger than*, $M = 4.5$). However, another novel message ranked the worst: "You're not you when you're gambling: Find the real you again" (*real you*, $M = 9.25$), which shows the need to continue testing potential candidates from this class of messages.

**Figure 1**

*Mean Responses to the Four Dependent Variables Across the 10 Messages*




*Note*. Horizontal lines identify groups of messages that were nsd from each other at $p < .01$ (after adjustments for multiple comparisons). Means were calculated at order = 0, that is, as the first message shown, adjusting for order effects. The dotted line at 4 identifies the neutral midpoint. Color-coding identifies messages above (blue), at (gray), or below (gold) this midpoint. Panel A refers to the "I don't like this message" outcome. Panel B refers to the "makes me want to gamble less" outcome. Panel C refers to the "is relevant to me" outcome. Panel D refers to the "is relevant to people experiencing gambling harms" outcome. nsd = not significantly different. See the online article for the color version of this figure.

**Table 4**

*Ranking of the 10 Positive Emotional Messages Tested in This Experiment*

| Overall rank (average rank) | Message | Abbreviation | Novel message? |
|---|---|---|---|
| 1 (2.50) | Quitting gambling can help you with the relationships that matter the most to you. | *Relationships* | Yes |
| 2 (3.25) | Don't gamble on your happiness: Do something else that will make you happy today. | *Happy today* | Yes |
| 3 (4.50) | Imagine what you could be buying instead. | *Imagine what* | No |
| 3 (4.50) | Think of all the money you'll save by not gambling. | *Money save* | No |
| 3 (4.50) | You're stronger than you think. Take the first step and speak to someone today. | *Stronger than* | No |
| 6 (4.75) | Celebrate life's real wins. Don't let gambling overshadow them. | *Celebrate life* | Yes |
| 7 (6.00) | Save the rest of your money for that family trip next month. | *Family trip* | No |
| 8 (7.00) | Every day without gambling makes you stronger. | *Every day* | Yes |
| 9 (8.75) | The fear of talking about gambling harm is often worse than the reality. | *Fear talking* | No |
| 10 (9.25) | You're not you when you're gambling: Find the real you again. | *Real you* | Yes |

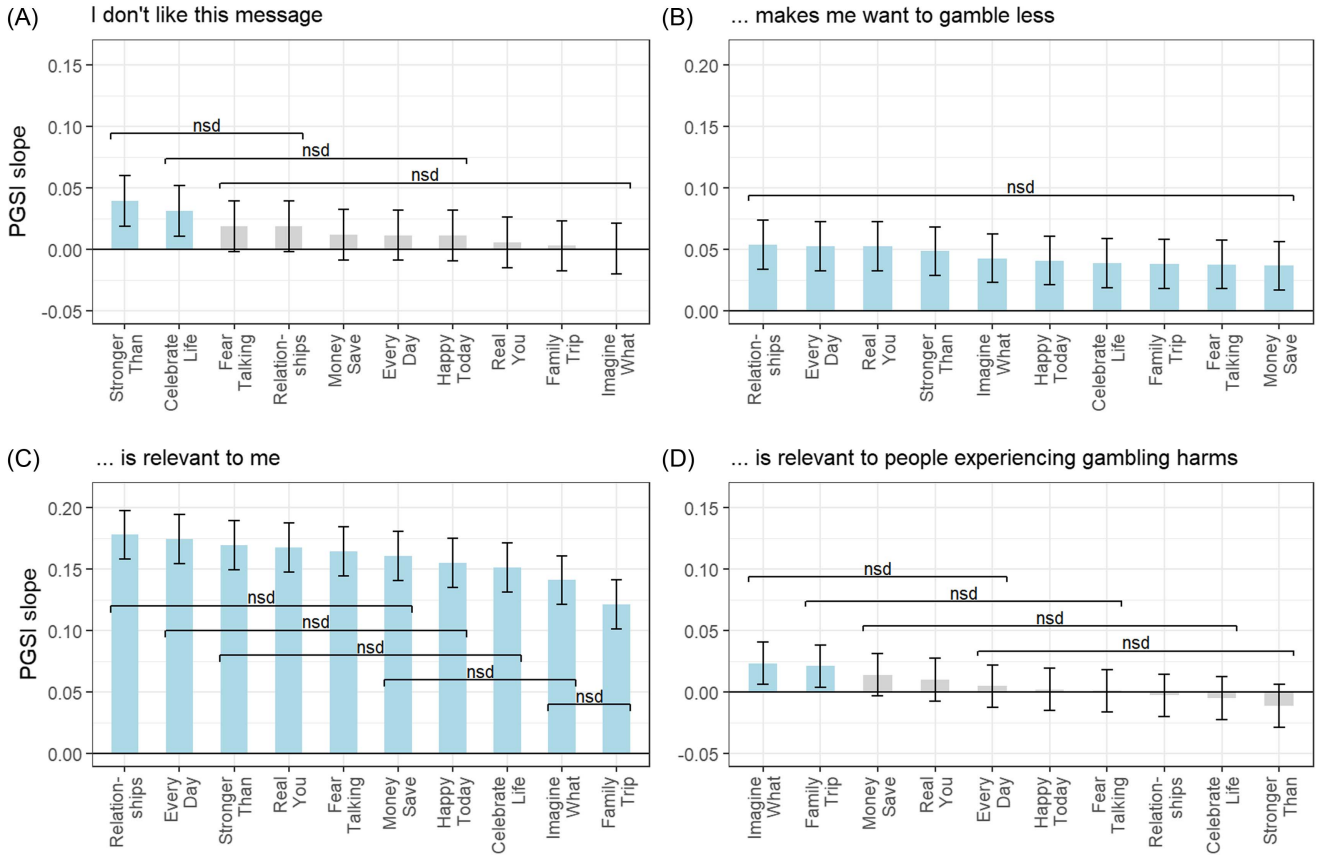
*Note.* The abbreviation shown in italics refers to the short label applied to each longer message.

## Research Aim 3: PGSI Interactions

Figure 2 shows how responses to the four dependent variables varied with participants' PGSI scores. Figure 2A shows interaction effect outcomes for the "I don't like this message" dependent variable, where the CLD shows three overlapping groups, with many messages being in two or three of these groups. It can be seen that two messages (*stronger than* and *celebrate life*) were liked

**Figure 2**

*PGSI Interaction Slopes for the Responses to the Four Dependent Variables Across the 10 Messages*




*Note*. Positive slopes represent higher responses as PGSI increases. Horizontal lines identify groups of messages that were nsd from each other at $p < .01$ (after adjustments for multiple comparisons). Color-coding identifies PGSI slopes for messages above zero (blue) or at zero (gray). Panel A refers to the "I don't like this message" outcome. Panel B refers to the "makes me want to gamble less" outcome. Panel C refers to the "is relevant to me" outcome. Panel D refers to the "is relevant to people experiencing gambling harms" outcome. nsd = not significantly different; PGSI = Problem Gambling Severity Index. See the online article for the color version of this figure.

significantly less by participants with higher PGSI scores. However, these effects were small, meaning that the messages showed a relatively minor risk of being disliked by participants with higher PGSI scores. The marginal effects plot in Section 3.5.2 in the supplementary analysis available at Newall, Weiss-Cohen, van Baal, et al. (2025) displays the strength of this effect, averaged across the 10 messages, where it can be seen that the messages were not disliked overall at any level of PGSI.

Figure 2B shows interaction effect outcomes for the "makes me want to gamble less" measure, where all 10 messages saw a significant positive interaction effect, which were not significantly different from one another and hence placed in the same CLD group. This means that participants with higher PGSI scores were more likely to agree to this dependent variable across all messages. The marginal effects plot in Section 3.5.1 of the supplementary analysis available at Newall, Weiss-Cohen, van Baal, et al. (2025) shows that average responses were significantly above the scale midpoint of "makes me want to gamble less" at a PGSI score of 1.

Figure 2C shows interaction effect outcomes for the "is relevant to me" measure, where all 10 messages again saw a significant positive interaction effect. This meant that participants with higher PGSI scores were more likely to see positive emotional messages as being relevant to them, which again indicates that these messages resonate the most with people who are suffering from higher levels of gambling-related harm. The marginal effects plot in Section 3.5.3 in the supplementary analysis available at Newall, Weiss-Cohen, van Baal, et al. (2025) shows that responses were significantly above the scale midpoint of "relevant to me" at a PGSI score of 8, suggesting that they were well-suited to high-risk gamblers. Messages were placed in up to four CLD groups, which showed that, although the interaction effects were not identical, they tended to be quite similar. Overall, results of this and the previous interaction effect analysis suggest that positive emotional messages appear to resonate the most with people who are suffering from higher levels of gambling-related harm.

Figure 2D shows interaction effect outcomes for the "relevant to people experiencing gambling harms" measure, where only two

messages saw a significant positive interaction effect (*imagine what* and *family trip*). Messages were placed in up to four overlapping CLD groups, which showed that the interaction effects again also tended to be quite similar. The marginal effects plot in Section 3.5.4 of the supplementary analysis available at Newall, Weiss-Cohen, van Baal, et al. (2025) showed that participants' judgments of whether the messages were relevant to people experiencing gambling harms tended to be unaffected by their own PGSI level.

## Research Aim 4: Sentiment and Topics in Free-Text Responses

The sentiment analysis revealed that the mean odds of providing a positive response over a negative response were 0.54:1, which means that negative responses were, on average, almost twice as likely. This is concerning, since the messages were intended to produce positive emotional intentions, which are unlikely to occur without an earlier positive reception.

Figure 3 shows the messages in the same order as Table 4's ranking, which reveals some interesting differences from the earlier analysis. *Family trip* and *money save* were the least likely to get positive responses relative to negative ones, despite being middling in the earlier analysis. *Stronger than* was the most likely to get positive comments, followed by *happy today*, which both scored well but not at the very top of the earlier analysis. Moreover, the top estimated sentiment (i.e., highest proportion of the three possible categories) was neutral for seven messages, namely, *celebrate life*, *every day*, *family trip*, *imagine what*, *money save*, *relationships*, and *stronger than*. The top sentiment was negative for three messages, namely, *fear talking*, *happy today*, and *real you*. None of the messages had "positive" as their most common sentiment.

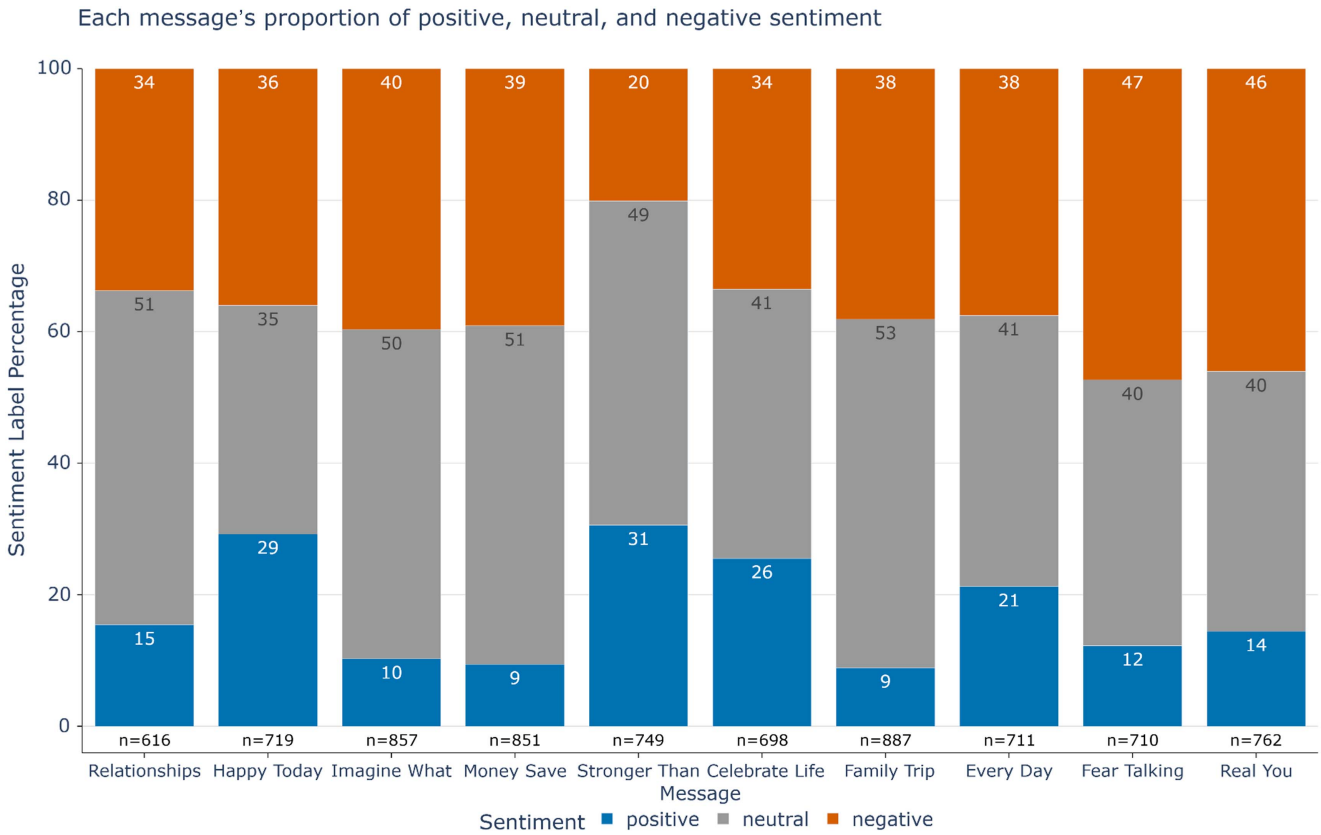
The topic modeling produced high coherence scores across messages ($C_v$: [0.749, 0.806]), producing highly interpretable and easily distinguishable topics. The top topic for each message is analyzed here in the same order as the messages were ranked in Table 4.

### *Relationships*

Participants found this message personally resonant and emotionally compelling, with participants noting it "makes you think of others, not just yourself" and appreciating its universal applicability. However, some respondents felt excluded, particularly those without close relationships who found it "irrelevant, rather reminding me that I have nothing." Relatedly, some perceived it to be "judgey" and "patronising."

**Figure 3**

*Sentiment Results for the 10 Tested Messages*




*Note.* The figure shows the sentiment labels assigned to feedback responses per message in percentage of the number of feedback responses received for that message. This may not add to 100 precisely due to rounding. See the online article for the color version of this figure.

### *Happy Today*

Responses revealed significant skepticism about separating happiness from gambling, with participants arguing that "gambling makes me happy" and questioning the message's effectiveness. The message was seen as highlighting "happiness over money" but faced resistance from those who find genuine enjoyment in gambling activities.

### *Imagine What*

This message generated strong emotional responses, with one participant experiencing an "immediate emotional impact" visualizing lost money, though responses were mixed on its practical effectiveness. Many felt it was either "patronising" to gamblers or unrealistic, arguing that "some people wouldn't spend any money if they weren't gambling."

### *Money Save*

Participants viewed this message as "stating the obvious" and as potentially ineffective for gamblers experiencing harm who are focused on potential winnings. The consensus was that gamblers are often "not interested in saving money" and could easily counter-argue with "but I could win more," with some warning it could increase "guilt."

### *Stronger Than*

This message received generally positive reception for its "empathetic" tone and supportive approach, with participants appreciating its simple, encouraging nature. However, some felt it was "too generic" and noted the limitation that "not everyone will speak to someone" when seeking help.

### *Celebrate Life*

Responses indicated this message felt too "abstract" and vague, with participants struggling to understand what constitutes "life's real wins." Many dismissed it as ineffective, describing it as "too semantic" or like a "football slogan" that those experiencing harm would "overlook."

### *Family Trip*

This message showed promise in making people "stop and think before spending" but faced criticism for its limited relevance to those without families. Participants therefore noted that it "might not be relevant to everyone" and could be problematic for gamblers experiencing family stress or isolation. Due to this perception, some described the message as a "guilt trip."

### *Every Day*

Participants appreciated the message's "positive" and simple nature, finding it "short and easy to understand." However, many felt it lacked substance, describing it as not conveying "a real message" and being too abstract without clear practical application. The overall tone of the message was also described as sounding "arrogant."

### *Fear Talking*

This message received mixed responses, with some appreciating its encouragement to seek help and others finding it confusing and ineffective. Participants noted it was "a bit of a mouthful" and that some "had to read it three times just to make sense of it."

### *Real You*

Responses showed appreciation for the concept of separating the person from harm, though some found it "too vague" and overly philosophical. Participants argued it could provide an excuse for gambling behavior, while others felt it was "too profound as a message" for practical application. Some participants also found the message overly presumptuous and "condescending."

## Exploratory Analyses

Various exploratory (nonpreregistered) analyses were also run and are fully reported in Section 3.6 of https://osf.io/bny8w/files/3g687.

Exploratory analyses were conducted to investigate potential order effects. First, participants' reported PGSI scores were unaffected by whether PGSI was completed before (3.3) or after (3.5) the message block, $t(4197) = -1.49$, $p = .135$. Only responses to the "makes me want to gamble less" question saw a significant effect of block order, with scores being significantly lower on this measure when the messages were presented after the PGSI block, $\chi^2(9) = 73.6$, $p < .001$.

Exploratory analyses were also conducted to investigate potential order effects among the 10 messages presented. Out of 40 possible interaction effects, 13 were significant. The five negative interaction effects, where messages tended to perform worse when seen after other messages, were confined to *imagine what* ("I don't like this message," "this message makes me want to gamble less," "this message is relevant to me") and *family trip* ("I don't like this message," "this message is relevant to me"). Of the eight positive interaction effects, where messages tended to perform better when seen after other messages, only *stronger than* appeared more than once across the following outcomes: "I don't like this message," "this message makes me want to gamble less," and "this message is relevant to people experiencing gambling harms." Overall, this suggests that order effects were relatively uncommon and were confined to a few messages that tended to appear somewhat better or worse when seen after others.

Finally, some exploratory analyses were run by adding covariates for mean-centered age and sex and their interactions with the messages, in addition to the variables included for the model run, to test for potential order effects. These models were run for each of the four dependent variables. Crucially, the significance of the variables for message, PGSI, and order was largely unaffected, although there were trends for some dependent variables that suggested a tendency for males and older participants to rate messages as less effective than other participants did. A full breakdown of these exploratory analyses is available in Section 3.6.2 of https://osf.io/bny8w/files/3g687.

## Discussion

Positive emotional messages attempt to leverage positive feelings to get people to enact a given behavioral change and have shown some promise in substance-based addictions (Guan & Monahan, 2017; Previte et al., 2015; K. Wang et al., 2024). We are aware of

two independently designed positive emotional messages that have been implemented in gambling contexts in Australia. The United Kingdom is also shifting toward a model of independently designed harm prevention messages (Peacock, 2025). While the types of messages that U.K. policy stakeholders intend to implement are at the present writing unknown, this study adds to a relatively small literature on independently designed harm prevention messages, via the most in-depth exploration to date of positive emotional messages. While those two Australian messages ranked in the top half of messages evaluated here among a sample of U.K.-based gamblers, we found that two novel messages ranked even higher. Participants responded with more negative than positive sentiment to messages in optional free-text responses by mentioning that messages could appear judgmental or might make them feel guilty. These findings have various implications that can inform the design of more robust studies, such as longitudinal studies or field trials on naturalistic gambling behavior.

Research Aim 4's natural language processing analysis is a strength of this work, which provided another evaluation of tested messages and also yielded recommendations for potential improvements. Interestingly, only *stronger than* yielded positive average sentiment. While this could mean that these messages are not leveraging positive emotions as intended, we argue that this conclusion requires more data before it can be fully argued for. Momentary negative feelings can, in the right circumstances, be motivators of positive change (Wieczorek & Dąbrowska, 2018). Higher resolution data on affect and help-seeking are needed to better understand these issues. It could also be that the positive emotional benefits of not gambling would be better conveyed via firsthand autobiographical accounts of people who have successfully stopped gambling (Newall, Weiss-Cohen, et al., 2024). Perhaps this communication style would prevent the "judgmental" tone that some participants perceived from these impersonal messages. Other more minor changes to the messages could be explored based on the feedback. For example, the best ranking message could be made more inclusive by, for example, changing it to "Quitting gambling can help with your existing relationships and help you build new ones too." Overall, the natural language processing analysis suggests various ways in which current knowledge on positive emotional messages could be built on.

Our findings have theoretical implications. From a capability, opportunity, motivation, and behavior perspective, the differential effectiveness of positive emotional messages across PGSI scores suggests that these messages may be more successful at targeting motivation among individuals who already have reduced capability due to existing gambling-related harms (Michie et al., 2011). The finding that participants with PGSI scores of 8 or above saw these messages as personally relevant aligns with self-efficacy theory, as individuals experiencing significant gambling harms may be more receptive to messages that could strengthen their confidence in their ability to control their gambling behavior (He & Tong, 2024; Muñoz et al., 2013). However, the negative sentiment expressed in some free-text responses, where participants mentioned that messages could appear "judgmental" or make them feel "guilty," may indicate that the intended positive emotional pathway was not always activated as theorized. While episodic future thinking has been shown to produce beneficial outcomes in decisions involving consequences spread through time (Benoit et al., 2011; Peters & Büchel, 2010), "Imagine what you could be buying instead" arguably failed to produce vivid mental simulations of positive future scenarios as posited. Instead, some responses highlighted vivid positive scenarios of gambling and winning, highlighting potential differences between gambling and decisions involving consequences spread through time:

> To a gambler, this message could make them think about what they could be buying if they won more money. So this message could attract them more to gamble (Newall, Weiss-Cohen, van Baal, et al., 2025).

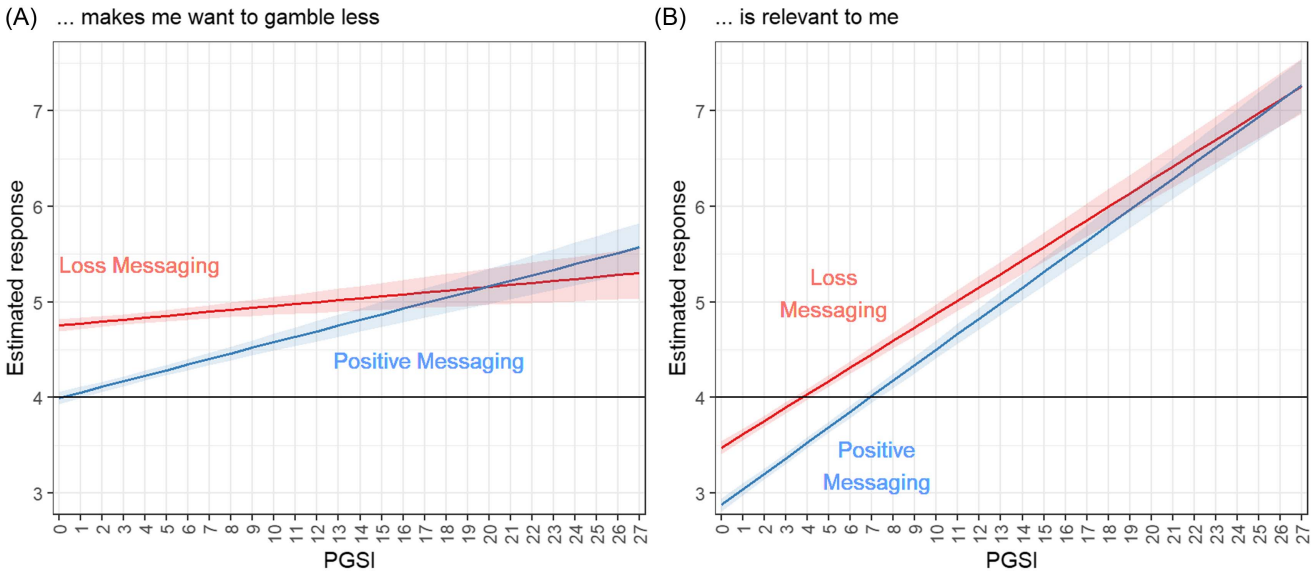
Different harm prevention messages are widely seen as being applicable to different types of people who gamble (Gaudett et al., 2025; Newall, Rockloff, Hing, Thorne, et al., 2023; Ray et al., 2024). We believe that this perspective can be informed by ongoing work to find strong candidates for each type of message (positive emotional, self-appraisal, etc.) and then eventually testing the best candidates from each type together to improve understanding of which messages resonate best with various audiences.

We illustrate how this could be done by comparing the significant PGSI interactions on the "relevant to me" and "makes me want to gamble less" measures against a previous study that also found significant PGSI interactions on these measures with 10 likelihood of loss messages (e.g., "chances are you're about to lose"; Newall, Weiss-Cohen, Petrovskaya, et al., 2025). The two studies also both asked participants the same "relevant to people experiencing gambling harms" measure. There were significant interactions between PGSI scores and message type (positive vs. loss messaging) for the first two measures, gamble less: $\chi^2(1) = 37.56$, $p < .001$; relevant to me: $\chi^2(1) = 11.36$, $p < .001$, but not for the third measure, people experiencing gambling harms: $\chi^2(1) = 2.21$, $p = .14$. Figure 4 shows that while likelihood of loss messages scored better on the two former measures at lower PGSI scores, there were significantly different interaction effects such that this advantage disappeared at high PGSI scores. This advantage could even reverse at the highest PGSI scores for the "makes me want to gamble less" measure (Figure 4A). While neither type of message was seen as "relevant to me" for participants with PGSI scores of 0, likelihood of loss messages began to appear relevant at a lower PGSI score than positive emotional messages (loss messaging $\approx 4$; positive messaging $\approx 8$; see Figure 4B). These speculative findings suggest that loss messages may be better suited to widespread population campaigns (e.g., being shown on gambling adverts), while positive emotional messages might perform better in high-risk environments (e.g., as a popup during an online slots game). This may well be because positive emotional messages only resonate with an audience that has already experienced significant gambling harms, while loss messages may resonate even with no-risk gamblers. These and other potential trends should be further explored in a future study that controls for confounding factors that could influence these between-study comparisons.

These findings are subject to various limitations. The sample was recruited from a crowdsourcing platform where participants are more likely to gamble and experience harm, meaning these results cannot be necessarily generalized to the population of people who gamble (Pickering & Blaszczynski, 2021). We did not know how long participants would take to complete the task when deciding how much to compensate them. Paying participants £6.59 per hour *pro rata* may be perceived by some as being too low for the U.K. participants and has potential ethical and data-quality implications; however, this satisfied Prolific's platform rules regarding minimum

**Figure 4**

*Results of a Combined Analysis Comparing Effects of PGSI Interactions Between the 10 Positive Emotional Messages in This Study and 10 Likelihood of Loss Messages From Newall, Weiss-Cohen, Petrovskaya, et al. (2025)*




*Note.* Panel A shows results for the "makes me want to gamble less" outcome. Panel B shows results for the "is relevant to me" outcome. PGSI = Problem Gambling Severity Index. See the online article for the color version of this figure.

payment. Moreover, the dependent measure "this message makes me want to gamble less" reports an intention that may well not translate into subsequent behavioral changes (Sheeran, 2002). While a similar methodology involving self-report ratings was used to inform current Australian messages (Chapman & Priestly, 2022), this methodology is still less robust than gold-standard field trials on naturalistic gambling behavior (Heirene & Gainsbury, 2021). Although we established the relative effect sizes of different messages, we cannot comment as to what effect size needs to be achieved for implementation to be deemed beneficial. Policy decisions undoubtedly vary depending on political views and associated costs; therefore, nuanced discussions of effect sizes will be crucial to future policy research.

A comprehensive census of harm prevention messages adopted worldwide should be conducted to better ensure that a wider range of existing positive emotional messages can be included in future research. Further research should also continue to generate and test positive emotional messages using a range of methodologies (e.g., field trials, qualitative studies) and do so in a range of jurisdictions and with different potential audiences experiencing harm in varying degrees. Longitudinal research in particular could explore the factor of message fatigue, where a message tends to lose its effectiveness with repetition (McCullock et al., 2025), which is an important factor in optimal message implementation. Positive emotions might be better harnessed through other formats, such as TV adverts or educational videos, where the message is read out rather than written (Newall, Weiss-Cohen, et al., 2024; Torrance et al., 2025). There were some inconsistencies between the forced response measure "I don't like this message" and the optional free-text responses. For example, *happy today* was among the three best performing messages for the abovementioned outcome; however, the free-text analysis showed widespread skepticism toward the message. It could be that a vocal minority predominated in the optional free-text responses. Researchers should also look to other areas in public health for further inspiration as to harm prevention message design (Abroms & Maibach, 2008; Bryan et al., 2016; Witte & Allen, 2000).

Finally, one other limitation exists regarding the lack of a field-wide consensus definition on what a positive emotional gambling message is. Although the present messages were based either on previous messages, research, or a collaborative process involving the present authors and two people with lived experience of gambling harms, other readers could within reason disagree with some of our inclusions, with some messages potentially having conceptual overlap with, for example, self-appraisal messages (Gainsbury et al., 2018). This issue has been noted in a recent review of the gambling messaging literature, highlighting that messages tend to combine multiple strategies and could be classified in multiple ways (Gaudett et al., 2025). An expert Delphi consensus study, classifying a number of well-performing messages, would be one way of addressing this issue.

In conclusion, the present research showed how the design of positive emotional gambling harm prevention messages can be informed by evidence. While the most widely implemented message of this type scored well ("Imagine what you could be buying instead"), two novel messages scored even higher: first, "Quitting gambling can help you with the relationships that matter the most to you," and then, "Don't gamble on your happiness: Do something else that will make you happy today."

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