The Licensing Effect in Gambling Choice: A Daily Diary Study

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This manuscript is currently under review

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Data, codebook, materials, and supplemental materials:

https://osf.io/cuhrj/?view_only=f511b02fd17348309af21900ae3ee07f

Abstract

People with gambling problems gamble despite resolutions to stop. These choices may be more likely in contexts that allow for them to be justified (e.g., after a productive day at work), termed the licensing effect. This has not been tested in the domain of gambling. Using a daily diary design across 21 days ($n_{participants}$ = 156, $n_{reports}$ = 2,516), gamblers trying to reduce their gambling reported their daily justification opportunities (e.g., feelings of effort and achievement) and whether they gambled, as well as daily aspects of self-control (i.e., craving, conflict, suppression) and affect (positive and negative). Gambling occurred on 33% of the reported days. Prior-day justification opportunities were associated with a higher likelihood of gambling. Prior-day suppression showed a similar effect, whereas prior-day negative affect showed the opposite effect. After gambling, people experienced stronger cravings, weaker suppression, and poorer well-being (lower positive affect and higher negative affect). Our findings show that people may use justifications to gamble, despite its negative consequences, indicating that the licensing effect may, in part, explain why people gamble despite resolutions to stop.

Keywords: licensing effect, justifications, self-control, emotions, craving, daily diary, gambling

The Licensing Effect in Gambling Choice: A Daily Diary Study

The expansion of gambling, as seen in North America, is likely to increase rates of problem gambling (Holden, 2022). Gambling is associated with numerous harms, including poorer mental health, higher financial strain, and risk of mortality (Langham et al., 2016; Muggleton et al., 2021). A key feature of problem gambling is loss of control (O'Connor & Dickerson, 2006; Hodgins, 2011). Gamblers adopt goals to reduce or stop their gambling, but these behaviors often persist. Decisions to engage in desired behaviors, such as gambling, may be more likely when doing so is justified, known as the licensing effect (De Witt Huberts et al., 2014; Kivetz & Zhang, 2002). For example, a gambler may think about their productive day at work to justify gambling. This has not been tested in the domain of gambling. In the present research, we used an ecologically-valid daily diary design to test the degree to which opportunities to justify gambling were associated with subsequent gambling choices.

Gambling disorder is characterized by persistent or recurrent engagement in gambling that leads to distress in daily life. It is recognized by the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2013) and the eleventh revision of the International Classification of Diseases (World Health Organization, 2018). Being the first non-substance-related form of consumption to be recognized by clinical scientists as addictive (Petry et al., 2018; Yau & Potenza, 2015) and sharing addictive elements with both substances and emerging digital technologies, such as video games and social media (Clark & Zack, 2023; Potenza, 2006), gambling behavior serves as an exemplary case for understanding the wider mechanisms underlying behavioral additions.

A large body of literature shows that people are more likely to make desirable choices after feelings of effort and achievement. For gambling, with access to funds being an inherent

rate-limiting step for engagement, perceptions of disposable funds may also be a relevant justification to gamble (Dahan, 2021; Lesieur, 1979). In experiments, to induce the licensing effect, participants are typically led to believe that they exerted more effort or attainted greater achievement in a task before making a choice (e.g., Kivetz & Zhang, 2002). While experiments do not explicitly measure justificatory thoughts, in so far as the justification *opportunities* are manipulated, a putative interpretation is that the opportunities are later used to justify indulgent choices (De Witt Huberts et al., 2014a). Convergent evidence show that self-reported justifications correlate with lapses in self-control (De Witt Huberts et al., 2014b). The licensing effect persists across several domains (Lalot et al., 2022; Khan & Dhar, 2006; Rishika et al., 2021), but its potential role in gambling and other behavioral addictions has not yet been systematically tested.

Recently, in a preregistered study, we examined whether gamblers use justifications to gamble (Wu & Clark, 2024). In a sample of 154 gamblers trying to reduce their gambling, justifications related to effort, achievement, and finances loaded on a single factor solution. Crucially, people who reported more justifications to gamble had more severe problem gambling, and this relationship remained significant after accounting for (other) gambling-related cognitions and impulsivity, indicating a robust relationship between justifications and problem gambling. However, given the cross-sectional design, we cannot rule out the possibility that instead of constructing justifications to gamble *a priori* (i.e., licensing), people with more severe problem gambling may alternatively report more justifications *ex post facto* to rationalize their past gambling episodes. Our prior study also did not examine actual choices to gamble, only problem gambling severity. Here, we build on this recent study by examining the bidirectional relationship between justification (opportunities) and gambling choices.

We address several limitations of prior research. First, most studies on psychological processes in gambling are cross-sectional. This does not allow us to disentangle within-person effects from individual differences despite the fact that such processes are implied in most research questions (Curran & Bauer, 2011). For example, are people more or less likely to gamble when they experience negative affect? A daily diary lets us examine within-person effects. Second, a daily diary approach improves ecological validity. It captures justification opportunities and gambling choices that unfold in day-to-day life, moving away from effects detected in the confines of a laboratory study. Third, capturing real-life gambling can be challenging. Real-life gambling is typically measured using recall over lengthy periods of time. This is convenient but can be inaccurate (Shiffman et al., 2008). Although daily diary designs still rely on self-report and are thus susceptible to reporting biases, they likely reduce recall bias since participants report engagement in gambling on a given day.

Self-control and affect are psychological factors that probably shape problem gambling and other addictive behaviors (Koob, 2013; Mallorqui-Bague et al., 2023; Tiffany & Wray, 2014), but few studies have examined their links with gambling using day-to-day assessments, so these relationships are not well-understood in daily life. In the context of gambling limit violations, Yi et al. (2023) recruited a sample of 103 gamblers seeking to reduce their gambling, tracking them across 21 days. Examining same-day relationships, they found that people felt less positive and more negative on days when they violated set limits compared to days without, but craving was unexpectedly associated with fewer limit violations (Yi et al., 2023). One other study examined cravings. Among mostly non-risk gamblers, craving occurrence (but not intensity) was associated with subsequent gambling, but gambling was not closely associated with subsequent craving (Hawker et al., 2021). Three further studies examined affect. Two were

on anxiety (Bristow et al., 2018; Gee et al., 2010). One examining positive and negative affect focused on trait moderation effects, and was in a sample of predominantly students who gamble (Goldstein et al., 2014). As a secondary aim, we investigated whether self-control and affect influenced subsequent gambling in gamblers seeking to reduce their gambling and who were mostly at risk of problem gambling.

Current Investigation

Our primary goal was to determine if the licensing effect plays a role in decisions to gamble among gamblers seeking to reduce their gambling. Using a daily diary design, we are able to examine the effects of justification opportunities on *subsequent* gambling choices while addressing some limitations of prior work (e.g., ecological validity, recall bias). To ensure that our sample experienced at least some challenge controlling their gambling, we recruited gamblers who adopted the goal to reduce their gambling, a widely-used criterion for studying goal violations (e.g., Prinsen et al., 2019; Yi et al., 2023). Every evening for 21 days, participants reported their daily justification opportunities and whether or not they gambled. Our primary aim was to investigate the degree to which justification opportunities were associated with subsequent gambling choices. We also examined the reverse temporal effects of whether gambling choices were associated with subsequent justification opportunities, and whether justification opportunities were associated with subsequent self-control and affect.

To compliment the few daily diary studies that examine the effects of self-control and affect on gambling, and serving as a benchmark to compare the meaningfulness of the licensing effect in our sample, participants also reported daily aspects of self-control (i.e., craving, conflict, suppression) and affect (positive and negative). Similar to our primary goal of testing for the licensing effect, we examined whether self-control and affect were associated with

subsequent gambling choices, and whether gambling choices were associated with subsequent self-control and affect. Our code, materials, and data have been made publicly available: https://osf.io/cuhrj/?view_only=f511b02fd17348309af21900ae3ee07f. This study was not preregistered.

Methods

Participants

Our study was approved by the authors' institutional research ethics review board. We recruited participants living in North America using Prolific Academic. Data collected from Prolific is valid, reliable (Stanton et al., 2022), and comparable to, if not better quality than, undergraduate samples and data collected from other crowdsource platforms (Douglas et al., 2023; Peer et al., 2021).

Participants were reimbursed £1.50 for completing the baseline survey and £0.30 for each daily diary with a bonus of £0.30 for completing at least five surveys each week. Informed consent was obtained at the beginning of the survey. At the end of the study, a debriefing form including problem gambling resources was sent to participants. Data was collected in April 2023.

Procedure

Participants first completed a short prescreen (n = 1,500). Those who reported that they gambled in the past week, were currently trying to reduce their gambling, and were interested in participating in the daily diary component of the study were invited to the baseline survey (n = 220). We aimed to recruit 200 participants. Most participants completed the baseline survey (n = 180) and were invited to the daily surveys for the next 21 days. Though we fell slightly short of our target, our sample was comparable to prior work with a similar design (e.g., Yi et al., 2022).

The daily surveys were made available every evening between 5 p.m. and 3 a.m. Pacific Standard Time. We excluded duplicate daily responses from the same participants (n = 23) and participants who did not complete any daily surveys (n = 26).[1] Across the 21 days, 77% of the surveys were completed (2, 516 reports). Demographics are shown on Table 1.

Table 1

Demographics

Variable	*M* (*SD*) or *n* (%)	Variable	*M* (*SD*) or *n* (%)
Age in Years	34.55 (10.8)	**Income in USD or CAD**	67,045 (33,583)
Gender		**Employment**	
Man	116 (76.8%)	Employed	106 (70.2%)
Woman	34 (22.5%)	Student	15 (9.9%)
Non-Binary	1 (0.1%)	Other	30 (19.9%)
Cultural Background		**Marital Status**	
European	66 (43.7%)	Single, Never Married	84 (55.6%)
Asian	38 (25.2%)	Married or Partnered	59 (39.1%)
African	12 (0.08%)	Divorced or Separated	8 (5.3%)
Mixed/Not Listed/Others	29 (19.2%)	**Gambling Problems**	
Prefer not the answer	6 (0.04%)	PGSI	8.03 (5.30)
Education		Past: Quit	70 (46.4%)
Below Bachelor's	63 (41.7%)	Past: Treatment	13 (8.6%)
Bachelor's Degree	69 (45.7%)	Current: Quit	51 (33.8%)
Above Bachelor's	19 (12.6%)	Current: Treatment	6 (4.0%)

Note. Quit refers to the goal to abstain, so it could represent successful or unsuccessful attempts.

Measures

Daily Justification Opportunities

Participants were asked, "We experience numerous thoughts every day. Reflecting on today, how frequently did you have the following thoughts?" We asked about justification *opportunities* rather than justifications directly (e.g., "Did you use these thoughts to justify gambling?") to minimize the possible influence of rationalizations of past gambling episodes and to reduce demand characteristics. Based on prior work (Prinsen et al., 2019; Verhoeven et al.,

[1] The removal of duplicate daily responses did not impact the final n because we retained their original reports.

2015; Wu & Clark, 2024), our scale comprised 5 items: "I've worked hard," "I've made good progress on my goals/tasks," "I've been on top of my responsibilities," "I've been on top of my bills," and "I've got a surplus of money."[2] Response options ranged from 1 (*Never*) to 5 (*Always*). Items were averaged. Model fit: $\chi^2(10) = 124.64$, CFI = .96, RMSEA = .07, SRMR (within) = .03, SRMR (between) = .07. Reliability: Cronbach's alpha: .68 (within) and .93 (between).

Daily Gambling Choices

To measure gambling choice, we asked participants to report whether they gambled yesterday.[3] Response options were binary (*Yes/No*). This variable was shifted to align with the current-day report. When we refer to gambling, we are referring to this shifted variable, and thus gambling on the current day. If participants reported that they gambled, they were then asked how many hours they gambled, how much money (in dollars) they had intended to spend, and how much they actually spent. Given that most prior work focused on the effects of justification opportunities on *choice* rather than consumption intensity, we were primarily interested in whether participants gambled or not.

Daily Self-Control and Affect

Participants reported daily aspects of self-control (Hofmann et al., 2013; Prinsen et al., 2019). They reported the degree to which they experienced gambling craving ("How strong were your gambling cravings today?"), conflict ("To what degree did you find your gambling cravings

[2] There were two negatively framed items ("I've been feeling down," "I've been feeling bored") that we administered to try to capture negative justifications (Heiland & Veilleux, 2022), but because they had negative loadings on a one factor model (within: $\lambda = -.30$ and $\lambda = -.18$; between: $\lambda = -.47$ and $\lambda = -.39$), we excluded them when calculating the score for justifications. These items were also administered along with two filler items: "I need to prepare a meal or snack" and "I've been enjoying _____ (insert a hobby you were enjoying," to reduce demand characteristics.

[3] People often gamble in the evening and night. We may have missed these if participants reported current-day gambling, so we asked about gambling on the previous day (Yi et al., 2023; Yoshioka et al., 2024).

stressful or unpleasant today?"), and suppression ("To what degree did you try to resist or suppress your gambling cravings today?") over the course of the day. Responses were made on a slider ranging from 0 (*None*) to 100 (*Very Much*).

We used the Positive and Negative Affect Schedule (PANAS) to measure daily positive affect and negative affect (Watson & Clark, 1988). The scale consists of 20 items. Participants reported the extent to which they felt various emotions over the course of the day. Examples of positive affect include, "Excited," "Proud," and "Determined." Examples of negative affect include, "Upset," "Guilty," and "Afraid." Responses were made on slider ranging from 0 (*Not at all*) to 100 (*Extremely*). Items were averaged. Model fit: $\chi^2(338) = 2535.33$, CFI = .90, RMSEA = .05, SRMR (within) = .04 SRMR (between) = .08. Reliability: Cronbach's alpha for positive affect was .87 (within) and .97 (between); Cronbach's alpha for negative affect was .87 (within) and .98 (between).

Data Analysis

We used multilevel modelling to analyze our data. The daily surveys were nested within participants. Our continuous variables were standardized so we could compare their effects. We were primarily interested in within-person effects, so we participant-mean centered our predictors, thus each unit represents a one standard deviation change from the participant mean. To account for variation between participants and to improve generalizability, we used random intercepts and random slopes. Equation (1) shows an example model. We lagged our predictors so they represented prior-day effects (X_{t-1}). To account for the possible effects of gambling on subsequent gambling, we included prior-day gambling as a covariate (Y_{t-1}). We also included reporting day to account for dependencies in reporting day. For models with prior-day gambling as a predictor, we did not participant-mean center gambling but instead included the participant

mean gambling as a covariate. Analyses were conducted in R Studio Version 4.2 using lme4 (Bates et al., 2015).

$$Y = X_{t-1} + Y_{t-1} + X_{\text{Days}} + (X_{t-1} + Y_{t-1} \mid \textit{participant}) \quad (1)$$

Results

Gambling Across the 21 Days

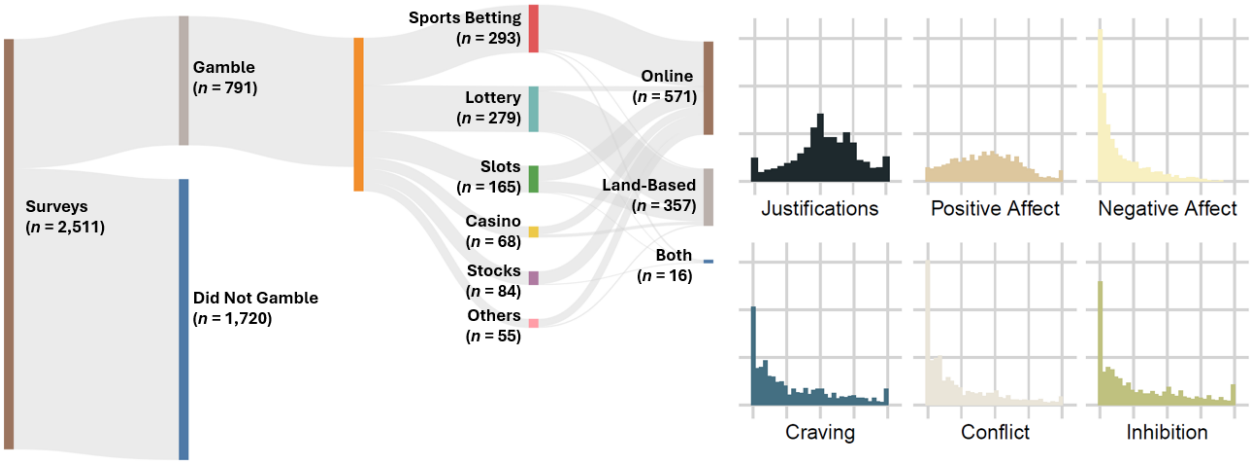
Figure 1 shows each gambling event, including engagement in different gambling forms (left), and histograms of the daily measures (right). Table 2 shows the bivariate correlations among the daily measures aggregated across the 21 days. Participants reported gambling on 33% of the days (*SD* = 29%). The average gambling episode lasted 1.76 hours (*SD* = 1.25).

Participants experienced at least some difficulty with controlling their gambling. On average, gambling spendings were larger than gambling limits (spendings: *M* = 172.99, *SD* = 354.18; limits: *M* = 100.05, *SD* = 239.56). Participants who gambled more experienced more conflict, and our sample had a relatively high average PGSI score, being at the categorical cutoff for high-risk of problem gambling (*M* = 8.03, *SD* = 5.30).

As shown on Table 2, people who encountered more justification opportunities generally felt more positive, less negative, and experienced less conflict. People who gambled more felt more craving, more conflict, and more negative affect. Intraclass correlations showed that 77% of the variation in justification opportunities were between participants, along with 52% in craving, 50% in conflict, 55% in inhibition, 70% in positive affect, and 71% in negative affect.

Figure 1

Descriptive Statistics of Daily Measures



Note. Left: Sankey diagram showing the total number of each gambling event. It starts from the total number of surveys, then whether participants gambled or not, then the specific gambling form (mutually inclusive), and ends with whether it was considered online or land-based. Stocks trading is not considered gambling, but it has both structural similarities and phenomenological overlap with gambling, so we included it as a possible form (Williams et al., 2022). Pathways are weighted by the number of reports going to the next node. Right: Histograms showing 0 to 600 reports aggregated across 21 days (y-axis) of justification opportunities (*Never* to *Always*), positive affect and negative affect (*Not at All* to *Extremely*), and craving, conflict, and suppression (*None* to *Very Much*).

Table 2

Bivariate Correlations Among Daily Measures Aggregated Over 21 Days

	1.	2.	3.	4.	5.	6.	7.
1. Justifications	---						
2. Gambling	.07	---					
3. Craving	-.09	.53***	---				
4. Conflict	-.21**	.28***	.78***	---			
5. Suppression	-.15	.18*	.74***	.82***	---		
6. Positive Affect	.59***	.02	.05	-.06	.03	---	
7. Negative Affect	-.31***	.16*	.52***	.64***	.51***	-.13	
8. PGSI	-.22**	.21**	.46***	.57***	.47***	-.13	.46***

Note. Values represent effect sizes (*r*). *$p < .05$,**$p < .01$, ***$p < .001$.

Justification Opportunities

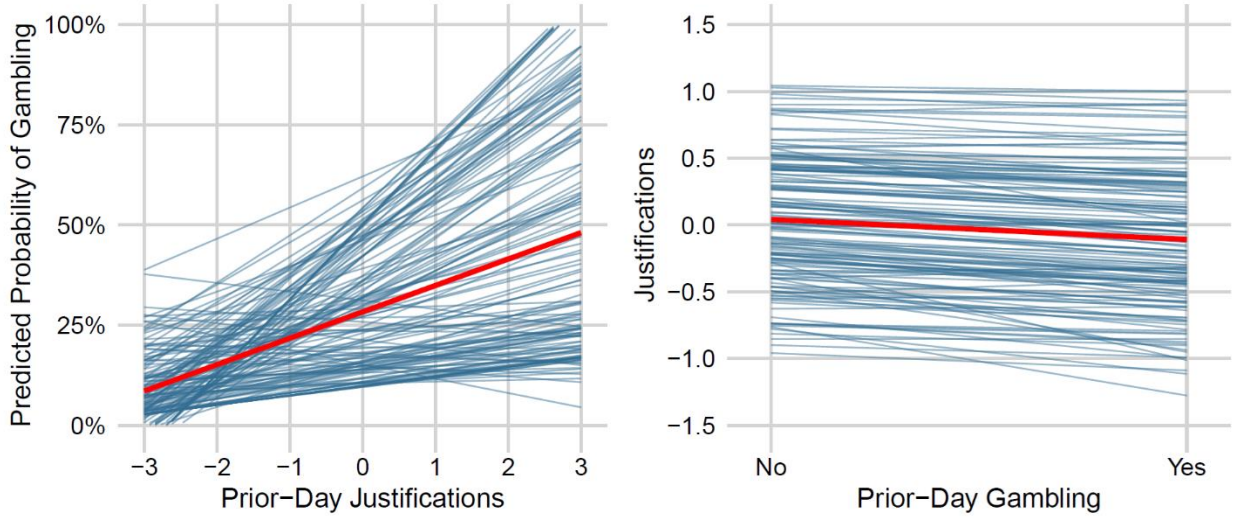
Figure 2 shows the bidirectional relationship between justification opportunities and gambling choices. We were primarily interested in whether prior-day justification opportunities were associated with gambling. Prior-day justification opportunities were associated with a higher likelihood of gambling, $\beta = .38$, OR = 1.47, $p = .026$.

If our measure of justification opportunities also captured rationalizations of past gambling episodes, participants should report more justification opportunities after gambling. To the contrary, prior-day gambling choices were negatively associated with justification opportunities, $\beta = -.15$, $p < .001$. In other words, participants reported fewer justification opportunities after gambling days.

We wanted to examine whether the association between prior-day justification opportunities and gambling could be explained by increased positive affect from encountering these opportunities, which might, in turn, motivate gambling. Prior-day justification opportunities were not significantly associated with positive affect, $\beta = -.02$, $p = .577$. Likewise, prior-day justification opportunities were not significantly associated with negative affect, $\beta = .03$, $p = .381$, craving, $\beta = .01$, $p = .893$, nor suppression, $\beta = -.06$, $p = .139$. In light of these effects, we did not further test for mediation by positive affect.

Figure 2

Relationships Between Justification Opportunities and Gambling Episodes



Note. Relationships between prior-day justifications and gambling (left) and prior-day gambling and justifications (right). Red slopes show the average relationship across participants. Blue slopes show the relationship for each participant.

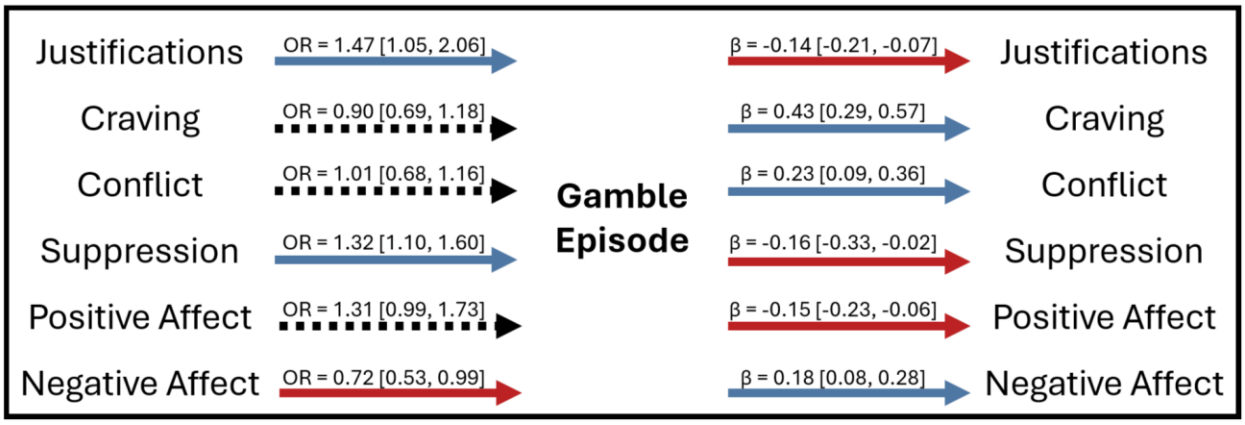
Self-Control and Affect

How well are aspects of self-control and affect associated with gambling? Prior-day craving was not significantly associated with gambling, β = -.10, OR = .90, p = .464, while prior-day suppression was associated with a higher likelihood of gambling, β = .28, OR 1.32, p = .003. For affect, prior-day positive affect was associated with a greater likelihood of gambling, though this was not statistically significant, β = .27, OR = 1.31, p = .057, and prior-day negative affect was associated with a lower likelihood of gambling, β = -.32, OR = .72, p = .043.

In terms of the effects of gambling on self-control and affect, prior-day gambling was associated with stronger cravings, β = .43, p < .001, less suppression, β = -.16, p =.027, less positive affect, β = -.15, p < .001, and more negative affect, β = .18, p < .001.

Figure 3

Summary of Relationships with Gambling Choices



Note. The variable(s) at the beginning of the arrows (to the left) are lagged one day prior. Blue arrows represent significant positive associations. Red arrows represent significant negative associations. Dashed arrows represent non-significant associations.

Individual Differences

As shown on Figure 2, the association between prior-day justification opportunities and gambling choices varied across participants (random effect variance = .25). Could the licensing effect be enhanced in people with more severe problem gambling severity (Ferris & Wynne, 2001), stronger gambling-related cognitive distortions (Raylu & Oei, 2004), or heightened impulsivity (Cyders et al., 2014)? Adjusting for multiple comparisons, we did not find strong evidence in support of these interaction effects (see Table S1), though this is in line with the literature that find few traits moderate the daily predictors of daily gambling (Goldstein et al., 2014; Yi et al., 2023). Details are reported in our Online Supplemental.

Discussion

A key feature of problem gambling is loss of control. People may be more likely to gamble in contexts that allow for it to be justified, as an example of the licensing effect from consumer psychology and eating behavior (De Witt Huberts et al., 2014a). No existing work has tested this in the domain of gambling. In the present research, using a daily diary approach, we tested the licensing effect in gambling choices among gamblers trying to reduce their gambling.

Our sample were predominantly at risk of problem gambling. We found that justification opportunities were associated with a higher likelihood of subsequent gambling, providing evidence in support of the licensing effect. Gambling was also more likely after higher suppression and lower negative affect. Conversely, after gambling, people experienced stronger cravings, were less willing to suppress their cravings, and had poorer well-being (i.e., lower positive affect and higher negative affect). Our findings suggest that people may use justifications to gamble, despite the negative consequences of doing so, indicating that the licensing effect may, in part, explain why people gamble despite resolutions to stop.

The daily diary data indicate that justification opportunities that unfold in day-to-day life are associated with prospective decisions to gamble. This extends recent work finding cross-sectional links between gambling justifications and problem gambling (Wu & Clark, 2024). Also, our results substantiate prior work on the effects of justification opportunities on indulgences in the laboratory (De Witt Huberts et al., 2014a; Kivetz & Zhang, 2002), indicating that prior laboratory findings may generalize to day-to-day life. As a unique case of the licensing effect, people can even use prior attempts at restraint to justify indulgences (Mukhopadhyay & Johar, 2009). Indeed, we found that people were more likely to gamble after trying harder than usual to suppress their gambling cravings. Taken together, these findings suggest that the licensing effect may be implicated in decisions to gamble in day-to-day life among gamblers seeking to reduce their gambling.

Could our results be due to the rationalization of past gambling episodes? People may rationalize past gambling episodes to convince themselves that “everything is okay” (Lesieur, 1979). Our measure of justifications may have inadvertently captured the rationalization of past gambling episodes. Although we asked about justifications indirectly (i.e., we assessed

o*pportunities* to do so) and examined time-lagged effects, reducing this possibility, past gambling may have nonetheless influenced these reports, which has been highlighted by the one other study examining justifications in daily life (Prinsen et al., 2019). If this was the case, we should expect participants to report more justification opportunities after gambling, but here, we did not observe such an effect. In fact, participants reported *less* justification opportunities after gambling. Thus, it is unlikely that our measure of justifications captured the rationalization of past gambling episodes.

If people gamble because they feel justified to do so, the licensing effect might act as a buffer against the negative consequences of gambling. Indulging can be strategic and benefit long-term reduction or abstinence goals (Jia et al., 2019). To test this, we examined the effects of gambling on subsequent self-control and affect. We found that after gambling people felt less positive and more negative, in line with recent work finding that days with gambling limit violations were characterized by less positive emotions and higher negative emotions (Yi et al., 2023). This also resonates with an older study in a small sample (n = 17) of gamblers, which found mean levels of anxiety were higher after gambling than before, suggesting that gambling increases anxiety rather than function to relieve it (Gee et al., 2010). In the present study, across the 21 days, people who gambled more tended to feel more negative emotions, suggesting that gambling may have longer-term, downstream consequences. Conversely, people who had more justification opportunities felt more positive, less negative, and experienced less conflict. We find this contrast interesting, because it indicates that even though having *opportunities* to justify gambling may not be harmful, it predicts gambling which, in spite of it, could be.

The widely-accepted interpretation of the licensing effect is that people use justification opportunities to allow themselves to indulge. But, there could be an alternative, *direct* pathway

that does not require such deliberation or metacognition. Encountering opportunities to justify gambling could heighten positive affect in such a way that spills over to the following day and directly drive gambling (Cummins et al., 2009; Juma & Pandelaere, 2023). If so, justification opportunities should be positively associated with subsequent positive affect. However, we did not find this to be the case. Prior-day justification opportunities were not closely associated with positive affect, suggesting that it is not that people gamble after encountering opportunities to justify gambling because they are still *feeling* positive but rather they may gamble because they are *thinking* back to these experiences – that may nonetheless be positive – to justify gambling.

Across the 21 days, people who reported stronger cravings tended to engage in more gambling, conforming to the well-documented role of cravings in problem gambling (Mallorqui-Bague et al., 2023; Tiffany & Wray, 2014). Some of our day-to-day craving effects aligned with prior work. A recent study found that craving (intensity) was not closely associated with subsequent gambling in a sample of mostly non-risk gamblers (Hawker et al., 2021), which our results support, generalizing these results to people with relatively higher levels of problem gambling. On the other hand, diverging from the null relationship reported by Hawker et al., (2021), we found that gambling was associated with stronger subsequent cravings. To reconcile this discrepancy, it is possible that people with relatively high levels of problem gambling may have more learned associations that drive ongoing craving through cue reactivity, rather than a more conventional "drive reduction" (i.e., satiation) effect in participants with lower levels of gambling involvement. We note that our method of asking whether participants gambled *yesterday* could have elicited cravings and thus enhanced the craving rating on the *present* day.

Our observation that negative affect was associated with less subsequent gambling seems to be inconsistent with prior experimental research using mood induction procedures (e.g., Devos

et al., 2018). Mood induction designs test immediate impacts on gambling, such that people are presumably feeling negative during the gambling episode. In a daily diary design, participants submit ratings on an intermittent basis over a relatively long period of time (21 days), so the affect they report may have dissipated by the next day. Short-term, negative states may motivate gambling as people are still suffering its effects, as seen when coping. Longer-term, negative states may discourage gambling as people have reduced energy and may try to avoid pleasurable and/or risky activities that may lead to negative states once again. Future studies could use an experience sampling methods that captures both moment-to-moment and longer-term relationships between negative affect and gambling.

Out study is not without limitations. First, although our sample was culturally diverse (over 50% non-white), most identified as men and had relatively high income (M = $67,045). Our sample was not representative, reducing our ability to generalize our findings to other samples. Future studies are required to confirm our findings in more diverse samples. Second, we did not characterize the licensing effect with respect to specific gambling forms, with the most common forms being sports betting, lotteries, and slot machines. The licensing effect may be particularly impactful for gambling forms that are more accessible, as gamblers can readily place a bet on their phones as soon as they experience a justification opportunity. Future studies could examine whether the licensing effect differs between gambling forms. Third, we assumed our measure of justification *opportunities* would be indirectly indicative of justifications. In contrast to our previous work showing that problem gambling is related to more justifications (Wu & Clark, 2024), here we did not observe problem gambling to be related more justification *opportunities* and actually find some evidence in support of less. Together, this might suggest that whereas people with more severe problem gambling use more justifications to gamble, they

do not necessarily experience more encounters to do so. In any case, though our findings indicate that the licensing effect might be present in a sample of risky gamblers who experience difficulties controlling their gambling, the extent to which this effect is related to gambling harms remains unclear. Lastly, our study was not preregistered so future studies are needed to confirm our findings.

Conclusion

In the present research, we investigated whether the licensing effect was implicated in the context of gambling choices. To do so, we recruited gamblers seeking to reduce their gambling and who had relatively high levels of problem gambling, tracking them every day for 21 days using an ecologically valid daily diary approach. Our study also adds to the few daily diary studies that examine gambling, and even fewer that examine self-control and affect, despite self-control and affect being central to problem gambling. We find that opportunities to justify gambling are associated with subsequent decisions to gamble, indicating that the licensing effect may, in part, explain why people with problem gambling continue to gamble despite trying to reduce their gambling.

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