HELPING UK CASINO PLAYERS GAMBLE RESPONSIBLY:

Evaluating the Impact of Safer Gambling Customer Interactions
(November 2018 - February 2020)

Final Technical Report

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Executive Summary

The current study uses player data gathered in the 2019 UK Casino Trial of the ALeRT BETTOR Protection System from November 2018 to February 2020 to assess the impact of safer gambling interactions by UK casino staff in reducing behaviours associated with customer risk for gambling problems among slots players.

Background

Gambling is a popular recreational activity in the UK with about half of all adults typically making at least one wager each month and about 5% visiting one of 156 casinos in Britain prior to the impact of COVID-19 pandemic and casino closures. [1] For a minority of adults gambling can lead to harm that has wider consequences for them, their families, and the community.[2] Among regular gamblers the risk is higher. Few of those experiencing difficulties with their gambling seek formal assistance with less than 3% in the UK accessing such services.[3] Stigma, privacy concerns, isolation, poor treatment outcomes are all identified as barriers with most delaying action until impacts are severe and at a crisis point.[4] [5] [6] This makes it challenging to assist people experiencing gambling problems. Casino staff are in a unique position to interrupt the escalation of risky play habits that contribute to gambling problems. The use of technology to help operators proactively identify and reach out to at-risk gamblers offers a significant opportunity for reducing and preventing harm especially when identification is linked to meaningful customer interactions, relevant resources, and referrals as part of a stepped customer care program. Evaluative research is a critical component of this process to monitor operator action for intended and unintended impacts and to improve the effectiveness of such actions in reducing risk and making gambling safer for customers.

Methods

From November 1, 2018 to December 31, 2019 five of the largest UK casino operators - Aspers, Caesars, Genting, Grosvenor, and the Hippodrome - took part in a live trial of the ALeRT BETTOR Protection System at 16 test sites throughout Britain. ALeRT was purpose-built to help UK casino operators identify and interact with at-risk customers.

During the trial, UK casino staff logged 2,151 customer interactions in the ALeRT system for 1708 at-risk customers. For most of these interactions (n=2058) staff also completed a detailed survey in ALeRT answering 16 questions about the characteristics of the interaction as well as filling in observation checklists for visual cues of high-risk gambling.

In December 2019, Focal Research released an interim report examining the role of customer interactions in leading to change in risky play behaviours by slot machine gamblers.[7] Early findings for interactions from November 2018 to March 2019 were

promising especially among those receiving multiple interactions with reductions observed in the amount wagered (-18%), session length (-20%), and frequency of play (-7%).

The current study expands the research to assess eligible interactions that took place from November 2018 to August 2019 to ensure changes in play patterns four to six months after the interaction, occurred prior to the start of the COVID-19 pandemic and casino closures. Focal Research developed pre-post benchmarks for evaluating changes in ten key play indicators for eligible players in each of three conditions: 1) At-risk players receiving a single interaction (n=233); 2) At-risk players receiving multiple interactions (n=581); 3) At-risk players receiving no interaction (Baseline; n=812).

Analyses

Two primary analyses were conducted to assess the impact of the interactions and identify the factors contributing to successful outcomes.

Part A examines the impact of customer interactions by UK casino staff for changes in key play indicators; do slots players continue to gamble after a safer gambling interaction by casino staff and, if so, what affect did the customer interaction have on their gambling behaviour? Learning which player behaviours are positively influenced by customer interactions confirms the value of customer service interventions in mitigating risk and helps operators understand how to support staff and players in achieving improved outcomes. Part B reveals which characteristics of the interactions proved more helpful to the player. Learning more about how staff interactions influence play outcomes helps to inform planning and supports evidence-based best practices.

Results

Part A – Evaluation of the Impact of Customer Interactions.

To assess the impact of customer interactions pre-post values were generated for the three player groups (i.e., single interaction, multiple interaction, baseline - no interaction) for each of ten play indictors to measure changes in average frequency, intensity, and speed of play within session and over time. Welch's F-test was used as an alternative to classical F-test as it does not require homogeneity of variance and is recommended as a preferred option for most social research and in-situ testing especially for measuring treatment differences in between group means.[8] One-tailed tests were used for hypothesis testing when the direction was specified versus two-tailed tests when there was uncertainty, or the outcome differed from the hypothesized direction, to compare the mean differences for each interaction group to baseline results.

For those receiving two or more safer gambling customer interactions there were significant reductions observed for eight of the ten play indicators including speed of play (-5.1%; p=.08), number of monthly sessions (-9.1%; p=.001), monthly turnover (-11.7%; p=.001),

session length (-15.1%; p<.000), average turnover per session (-15.9%; p=.01) and monthly play hours (-19.8%; p<.000) especially when in a losing session (-22.0%; p<.000). As a result, at-risk customers reduced their frequency of play, were less likely to be chasing losses, and had a one-third reduction in out-of-pocket losses (-31.9%; p=.11) underscoring the potential value of UK casino customer service interventions in reducing risk.

Part B – Evaluation of the Impact of Interaction Characteristics.

Casino staff completed detailed surveys in ALeRT for each interaction. This data was used to create 36 characteristic variables which were then correlated with the pre-post behavior changes for each play indicator based on interactions conducted for those customers receiving two or more interactions (n=581) in Part A.

The analysis explored how different characteristics influenced the effectiveness of the interaction for each key play behaviour, something that would not be possible without staff inputting this information into ALeRT. Many interaction factors were found to influence play outcomes especially the number and type of interactions, length of the interaction, the position of the person conducting the interaction (i.e., seniority), whether staff saw other confirmatory cues signalling risk, staff referrals for manager follow- up and manager alerts. Several strategies are discussed for improving interaction effectiveness with the results emphasising the importance of social responsibility interactions staged as a normal part of the customer journey.

Key Findings

Stopping Behavior after Interactions

- In the current study safer gambling interactions by UK casino staff did not discourage patrons from visiting the venue although it did lead to significant changes in high-risk gambling patterns especially among those receiving more than one interaction.
- Player churn was similar among all player groups; about 29% stopped playing at follow-up whether they had received a single interaction, multiple interactions, or no interaction.
- While interactions did not cause at-risk customers to stop playing there was evidence that those customers who received more than one interaction and subsequently stopped playing were more like to have self-excluded (19.2% versus 12.5%; p=.07).

Impacts of Single Customer Interactions

- Customers receiving only a single interaction during the trial showed little change in their behaviour at follow-up, yet these initial contacts were important in helping staff assess player risk and prioritise action that led to positive impacts for other customers.

- Following the first interaction, casino staff were more likely to direct future resources to those at-risk customers displaying other signs of risk. For example, compared to those at-risk customers that received two or more safer gambling interactions, single interaction customers played less frequently ($p=.02$), had lower turnover ($p<.000$) and lower losses ($p=.02$) suggesting staff effectively focused on customers requiring more urgent attention.

- It is noteworthy that within-session gambling behaviours such as session length, speed of play (i.e., number of wagers per hour) and betting rates (e.g., average turnover per wager, per session, and per hour) did not differ significantly between at-risk gamblers receiving multiple interactions versus single interactions.

- If these at-risk 'players of interest' increase their frequency of play or are playing at other locations, the cumulative impact of their gambling would be similar to that observed for those at-risk customers receiving multiple interactions.

- Therefore, there appears to be an opportunity, especially from a preventative position, for casinos to develop support strategies focusing on within-session gambling strategies to help staff in assisting lower-frequency at-risk players identified for interactions.

Impact of Multiple Customer Interactions

- For at-risk players experiencing multiple interactions from casino staff, there were significant reductions observed for almost all high-risk behaviours up to six months following a safer gambling interaction when compared to baseline results for those without an interaction.

- Compared to baseline, these customers identified as at-risk 'players of interest' by the ALeRT system reduced their monthly play hours (-19.8%; $p<.000$) by playing less often (-9.1%; $p<.000$) and for shorter periods (-15.1%; $p<.000$) of time after receiving two or more interactions from UK casino staff.

- Most importantly, these customers greatly reduced the hours played in loss sessions each month (-22.0%; $p<.000$) which accounted for 81% of the reduction in monthly time played.

- The findings suggest many players acted on staff advice to stop chasing losses, to set and honour play limits, and to end losing sessions before they overspend.

- While turnover per play hour was unchanged, at-risk customers receiving interactions slowed their betting speed making fewer wagers per hour of play (-5.1%; p=.08).

- However, compared to baseline results for those who did not receive an interaction turnover per wager went up (6.0%; p=.03), suggesting some players may be compensating for shorter less frequent sessions by increasing their bet rate.

- Increasing bet rates could signal an increase in betting intensity in response to cutting back their frequency of play. Alternatively, increases in turnover per hour may also reflect the impact of an increase in a player's wagering rate when they were in a winning position. A player may not even be aware they are making risky wagers when in this situation as this behaviour is less obvious than other risk markers such as increasing losses or time spent gambling. Safer gambling staff should be aware of this possibility so they can help prepare customers to counter this response when players are cutting back their play.

- Aside from increased bet rate, there were significant reductions in monthly play hours, turnover per session and monthly turnover all contributing to a decline in monthly losses of ≈£157.04 (-31.9%; p=.11), which is largely attributable to a reduction in hours played in loss sessions.

- Thus, it can be concluded that UK casino staff interacting two or more times with customers identified by the ALeRT system over the course of the trial helped these at-risk players moderate their gambling up to six months following the interaction.

Key Interaction Characteristics Impacting Outcomes

- The findings indicate the interaction outcomes were more effective under certain conditions that can be influenced by casino policies and practices.

- Longer, more intensive interactions were associated with stronger impacts especially when the interaction was delivered by a senior staff member such as a Gaming Manager or PML (Personal Management Licensee).

- Staff were effective in escalating action with, 'manager alert' and flags suggesting the right people were being referred for additional attention and outcomes improved when the referrals were acted upon by management.

- Interactions had the strongest effect in situations where staff noted the player was exhibiting several visible cues associated with gambling risk highlighting the value in training staff to recognize cues to help identify and confirm a player's risk status.
- Several other strategies were identified and discussed for helping casino staff and customers in addressing specific risky behaviour.

For additional information refer to Part A & B Conclusions and Discussion

Introduction

UK casino operators were seeking help in identifying and assisting customers most likely to be experiencing problems with their gambling to facilitate player safety at the casino and prevent gambling-related harm. From 2014 to 2019, five of the largest UK casino operators - Aspers, Caesars, Genting, Grosvenor, and the Hippodrome - were part of an international collaborative research project with Focal Research. The end-goal for the UK operators was to introduce a coordinated program across UK's land-based casino properties supporting regulatory compliance for player protection. The resulting ALeRT™ *BETTOR* Protection System was purpose designed to provide UK operators with a complete evidence-based solution for meeting their current and future licensing objectives and priorities for action as outlined in the UK Gambling Commission's National Gambling Strategy, including the ability of licensees to 'identify' high-risk players of interest (POIs), 'interact' to assess and assist such customers, and 'evaluate' success in reducing and preventing risk and harm.

Over the course of the project Focal Research developed, and tested a set of sophisticated practical responsible gambling (RG) tools for UK casino operators including:

1. Algorithms to identify customers exhibiting high-risk gambling patterns associated with gambling problems as well as low-risk responsible gambling patterns.
2. Software for securely tracking player risk profiles, managing customer interactions and monitoring outcomes.
3. Staff tutorials, resources, and training for using the ALeRT algorithms and software to improve player safety.
4. The ALeRT™ *BETTOR* Customer Care training program to assist casino staff in delivering effective customer interactions and support.
5. A framework for setting baselines and creating pre-post benchmarks for evaluating the impact of safer gambling interactions with customers.

A live trial of the ALeRT system was conducted from November 1, 2018 to December 31, 2019 at 16 casino venues to test the technology and assess the efficacy of customer interactions in producing improved outcomes for UK casino slots customers.

In December 2019 Focal reported early results comparing pre-interaction benchmarks for 10 key play indicators in the three months before the interaction to post indicator outcomes four to six months following the interaction. During the first five months of the trial (Nov 2018 to Mar 2019), there were 515 interactions conducted for 360 slots players that met the criteria for the analysis. Interim findings were promising especially among customers receiving multiple interactions (n=155) with reductions observed in the amount wagered (-18%), session length (-20%), and frequency of play (-7%) six months post interaction when compared to baseline values for those who did not have an interaction.

A second full-scale evaluation with UK operators was planned to start six months after completion of the trial on December 31, 2019 using data from August 2018 to June 2020 to yield larger sample sizes for evaluation and statistical testing. However, the advent of the COVID-19 pandemic in March 2020 led to extended casino closures and disruptions in play patterns truncating the six-month post interaction window for the trial. Evaluation was subsequently restricted to 844 interactions that took place with 496 eligible slot machine gamblers from November 2018 to August 2019 to ensure any changes in post-interaction play patterns (i.e., Months 4 to 6 following interaction until March 2020) were examined prior to the start of the COVID-19 pandemic.

Throughout the trial UK casino staff also completed 2058 surveys in the ALeRT system summarizing the key characteristics of the interaction such as the number of interactions, the time length and level of interaction (Level 2: General Information; Level 3: Self Management; Level 4: Self-Help & Referrals; Level 5: Exclusion), what if any information or resources were provided, perceived receptiveness of the player, perceived player comprehension of the material/info provided, perceived helpfulness of the interaction and observation of other visual, social, emotional or behavioural cues suggesting player risk.

There were two primary analyses conducted using the data gathered and stored in the ALeRT BETTOR Protection System during the trial:

- **Part A: Evaluating the Effects of Customer Interactions – Assessing the Impact of Interactions for Key Play Indicators** examines pre/post differences in player's gambling behaviour following safer gambling interactions (n=844) at UK casinos when compared to baseline values (n=812) for each of 10 key indicators; do players continue to gamble after the interaction and if so, did the interaction affect subsequent gambling behaviour such as gambling intensity, frequency, or spend?

  Learning which player behaviours are positively influenced by customer interactions not only demonstrates the value of customer service interventions in mitigating risk and harm but also helps operators understand how to support staff and players in achieving improved outcomes.

- **Part B: Making Interactions More Effective – Assessing the Impact of Interaction Characteristics for Changes in Key Play Indicators** identifies the relationship between features of the interaction and changes in customer's play behaviours; how did interaction strategies and practices influence post interaction outcomes and which proved to be most helpful to players in managing or controlling play?

  Understanding the components of successful interactions such as the impact of timing, interaction length, staff seniority, visual cues, use of player resources provides feedback for planning and to enhance and reinforce interaction best practices.

The following report summarizes the method and key findings coming out of the analysis.

Impact Evaluation

The purpose of conducting impact evaluation is to obtain reliable information about the causal effects of a particular action, whether positive or negative, so this information can be used to produce better decisions, policies, and outcomes for a specific target group.[9] It is important to adopt robust evaluation practices as misleading findings may lead to discarding useful programs and/or retaining those that are ineffective or counterproductive.

Impacts may be intended or unintended but, regardless, to assess how an intervention affects outcomes requires an understanding of what the outcomes would have been in the absence of the intervention.[10] This means it is essential to have a control group or set of baseline values for estimating what would occur without an interaction.

The gold standard for impact evaluation centers on the use of randomised controlled trials (RCT). However, the use of RCT is often impractical for social science applications.[11] It may not be possible to randomly assign subjects to a control or test condition due to sample sizes, complexity, or ethical considerations. [12] For example, as part of an operator's UK licensing requirements all customers identified as possible problem or high-risk players are to be targeted with safer gambling action which precludes the use of an RTC approach for evaluation (e.g., assigning customers identified as high-risk players of interest (POIs) to an interaction versus non-interaction condition)[13].

The purpose of RCT is to remove bias but in many cases for social research projects, particularly those conducted in situ, factors other than the interaction condition can intervene and have differential impacts on outcomes especially when a trial is conducted over time. [14] [15] For example, some players randomly assigned to the non-interaction control group may be exposed to responsible gambling information, tools and programs through other methods or may seek out treatment assistance during the trial which will influence subsequent behaviour.

An alternative to RCT is to conduct a baseline assessment to produce a reference point for comparing outcomes before and after an intervention.[16] By establishing baseline results prior to a high-risk customer receiving a safer gambling interaction, UK casinos create a proxy for determining what can be expected to occur if such an interaction did not take place (pre-post outcomes for players of interest – POIs who do not receive an interaction). [17] The pre-post baselines are then used for comparison to pre-post interaction outcomes to assess the impact of a targeted action in achieving change over and above that which would occur in the absence of such action.

A critical component of the evaluation process, therefore, was selecting suitable outcome indicators and establishing baselines for setting reliable benchmarks, without which it is impossible to measure post interaction change. [18]

Research Design

To obtain conclusive outcomes there were several issues to address in generating reliable baseline measures as well as appropriate pre and post benchmarks for isolating the impacts of operator action for player outcomes:

- **Regression Effect** [19] - There is a tendency for extreme values to decline or increase naturally with repeated measure. This is due to regression to the mean such that, on average, the mean value for a group will stay stable overtime but for individuals within that group there may be movement. For those at either extreme of a response distribution at Time 1 the direction of change at Time 2 measurement can only be up if they started with a low value or down if they started with a high value. For example, those who are spending at high levels at one point in time are more inclined to exhibit a reduction in their spending at follow-up whereas those who were low spenders tend to increase although, on average, mean values for the group remain constant. Therefore, it is important to determine whether the changes observed are due to regression effect or to the impact of operator action.

  Customers identified by the ALeRT algorithms as players of interest (POIs), by definition, are flagged for interaction and will tend to include customers most likely to display extreme behaviours so there is a chance that regression effect could exert an impact. To control for this possibility POIs identified before the trial were used to create the baseline values.

  Using past data, baselines were established for players of interest (POI) based on their play behaviours during the three months before they were first identified by the model as a POI (i.e., point of most extreme behaviour) and for 6 months following identification to determine the baseline rate of change (i.e., what happens to POIs without action/interaction). This method was highly effective in setting baselines for evaluating the preliminary impacts of interactions during the 2019 UK Casino Trial.[20]

- **Impact of Single versus Multiple Interactions** [21] - Research with interventions targeting other types of behaviour (e.g., smoking cessation, weight loss, alcohol use) suggest multiple interactions are more effective in helping individuals achieve and maintain positive changes in behaviour and, therefore should be incorporated into the design to identify differences that may be masked when examined at a total level (e.g., single interaction group versus multiple interactions group for comparison to baseline). Customers receiving single versus multiple interactions are also likely to differ in terms of risk; during the first interaction staff assess a player's risk, triggering follow-up action for those needing additional support and monitoring.

- **Immediate versus Long-terms Impacts** - Ten months of data was used for assessing impact for players receiving at least one interaction (3 months before the first interaction, month of interaction, 6 months post interaction). It is reasonable to

see immediate changes in response to novel or unexpected information on a short-term basis. To control for the possibility of transient improvement the post comparison period was set for 4 to 6 months following the interaction to assess the longevity of the impacts and best methods for supporting more permanent positive change (i.e., persistent rather than temporary change).

- **Seasonal Effects** - To minimize the effects of seasonality on play activity the sample included interactions that occurred over the continuous trial period including play behaviour that occurred during the three months before the first interactions (starting in August 2018) up to 6 months after the last interactions (ending in February 2020). If only conducted for a certain period (e.g., interactions from April-Jun) declines and increases in play may reflect changes in seasonal interest rather than actual changes in gambling activity (e.g., Players active in the spring may naturally reduce their gambling in the summer months due to competing interests). Measuring pre and post activity for interactions occurring over an extended annual period controls for this seasonality effect.

- **Restricted to Active Players** - For evaluation purposes, only those players who continued to gamble at least once in the specified pre benchmark period (3 months before interaction) and played in the post follow-up period (4 to 6 months after interaction) were included in the evaluation. Those who self-excluded or stopped play after interaction were tracked separately. Otherwise, the data for those who did not play during the post period will be entered as 'zeros' and bring down mean values for key indicators. For example, declines in expenditure, frequency and other key indicators will be lower due to their non-play and not due to play reductions or improved control among continuing customers. In some cases, players who were no longer active may have simply switched to another provider who is not targeting them for assistance or stopped using their loyalty card to avoid detection.

- **Analysis for Players Who Stopped Playing after Interaction -** To estimate the percentage of players who may have stopped, or greatly reduced their frequency of slot play due to interactions, only those who had any play activity in one of the three months prior to the interaction (Months Pre 3-1) and had no slot activity four to six months after the interaction month (Months Post 4-6) were included in the calculation for baseline values and those who stopped playing after receiving an interaction.

- **Outcomes must be assessed on a group rather than individual basis** – Individual players can exhibit changes in behaviour following an interaction, but it is difficult to determine how much, if any of that change may have been due to the treatment condition or might have occurred regardless. For example, post interaction a player may still exhibit an increase in how much money they wagered yet the amount of this increase may be only half that which would have occurred had they not received an

interaction. When using a larger sample of customers, it is possible to generate baselines and statistically reliable pre-post comparisons by looking at the average impact for a representative group of target customers.

Selecting the Evaluation Indicators

To assess the impact of customer interactions it is important to select evaluation indicators that adequately capture the outcomes that interactions are intending to target for improvement.

Table 1: Evaluation Key Indicators

Indicator	Description
Session Behaviours	
1. **Average wagers/bets per hour**	**Speed of Play –** Average number of wagers the player would make each hour they are at the location based on how fast the player makes each wager during a session of play.
2. **Average turnover per wager/bet**	**Bet Rate or Turnover Rate –** Average amount the player is risking (betting) each wager before wins or losses are incurred.
3. **Average hours per session**	**Play Session Length –** Average amount of time spent wagering during a play session from the time of first wager to last wager without a break of 3 hours or more.
4. Total monthly play hours in loss sessions	**Length of Play for Sessions Ending in a Loss (Loss Session Length) –** Total time spent wagering each month ending in a loss position.
Session Outcomes	
5. Average turnover per play hour	**Bet Rate per Hour –** Average amount the player is risking (i.e., betting) each hour of play before wins or losses are incurred**.**
6. Average turnover per session	**Bet Rate per Session –** Average amount the player is risking (i.e., betting) each session of play before wins or losses are incurred.
Play Frequency	
7. **Total monthly sessions**	**Number of Sessions Played per (Monthly Frequency) –** Sessions are defined as any series of wagering without a break of 3 hours or more.
8. Total monthly play hours	**Number of Hours Played per Month –** Total hours spent wagering on location each month.
Expenditure Outcomes	
9. Total monthly turnover	**Total Amount Wagered per Month –** Total amount the player is risking (betting) each wager before wins or losses are incurred.
10. Total monthly wins and losses	**Total Amount Spent per Month –** Amount the player either won or lost each month wagering (sum of amount wagered less amount won).

Baselines are vital for determining the impacts of the action taken. Frequency, expenditure, and intensity on their own are not strong predictors of risk yet these same items can be reasonable indicators for evaluating interaction impacts.[22]

Although the absolute amount of time or money spent by each player of interest (POI) will vary, problems with gambling are typically associated with affordability and over-consumption that leads to negative consequences for the player. [23] As a result, most interactions to assist at-risk customers, including those conducted by UK casino staff, focus on helping customers manage how often they gamble, how much time or money is spent, and in changing risky behaviours such as gambling intensity, speed of play and chasing losses.[24]

Therefore, achieving reductions/changes in these key behavioral outcomes is usually a primary goal for reducing risk and harm, hence the suitability of these items as outcome indicators. [25]

Assessing Changes in Indicator Behaviours

Four play behaviours (highlighted in Table 1 above) are under the control of the player and influence the outcomes for the other indicators:

1. How often a player visits the casino - Frequency (Monthly Sessions),
2. How long a player gambles when at the casino (Session Length),
3. How quickly a player wagers - Speed of Play (Wagers/Bets per Hour),
4. How much a player wagers – Bet Rate or Amount Risked (Turnover per Wager/Bet).

Modulating these behaviours leads to lower turnover per session, and lower turnover per play hour. This in turn leads to lower average monthly hours of play, lower monthly turnover, and on average, lower spending.

It should be noted that pre-post changes in spending is a relatively poor indicator for assessing the effectiveness of the interactions. This is because the behaviour is affected by luck and the experience of random wins/losses while gambling; some people may increase their gambling and still have lower expenditure due to the occurrence of a big win or a series of small wins whereas others may randomly incur more losses. Statistically, this means that spend data tends to have higher variance compared to other measures of play behaviour. Due to this variance, there is less likelihood of detecting significant differences with a spend indicator for a specific period although in the long-run players will have reduced losses.

In effect, this means that the indicators that are under the direct control of the player are more predictive of changed behaviour. Therefore, the primary purpose of the impact analysis and the use of the indicators is to determine the effect of the interaction on the four behaviours under the control of the gambler.

It is possible that differences in the controllable behaviours are not sufficient to reach a statistically significant threshold. Nonetheless, the cumulative effect of these small shifts in behaviour could result in a significant change downstream. For example, while there may be no significant differences detected for the controllable behaviours, the player may, on average, have reduced their turnover per play hour which, ultimately, leads to reduced losses in the long-term.

It has been well established in the literature that chasing losses is a high-risk factor contributing to over-consumption among gamblers[26] [27] [28]Accordingly, one of the goals of an interaction is to stop players from chasing losses or to know when to end a session. The primary focus is on encouraging players to use strategies to minimize or reduce losses. As players are less likely to stop when they are ahead and in a winning position, we would expect interactions to have the most effect on the length of play in loss sessions. To examine this possibility, the indicator, 'length of play in a loss session' was also included in the analysis.

Defining the Baseline Group

The purpose of the evaluation was to determine the impact of safer gambling interactions with at-risk and problem gamblers playing at UK casinos.

UK casinos have several tools and triggers for identifying customer risk so staff can proactively reach out to help customers in reducing and preventing harm. One such tool is the ALeRT *BETTOR* Protection System that uses sophisticated bespoke algorithms to identify at-risk players of interest (POIs) found to be engaging in play patterns most often associated with problem gambling as identified by the Problem Gambling Severity Index (PGSI) [29], the same instrument used to measure problem gambling in UK gambling prevalence studies. [30]

There are several key advantages to using players of interest (POIs) as the target group for setting the baseline values:

- All customers identified as a POIs by the risk detection algorithms in the ALeRT system are engaging in risky play decisions and play patterns associated with those scoring at problem gambling levels of 8 or higher on the PGSI and, therefore, are eligible targets for UK casinos customer interactions.
- Using the player data stored in an operator's data system it is possible to go back in time to generate pre-post baseline outcomes for POIs prior to receiving an interaction.
- A baseline can be set using the first identification of the customer as an at-risk POI as the point of reference for assessing pre-post changes in key play indicators that occur in the absence of any interaction. This serves as a benchmark for comparison to pre-post outcomes for at-risk POIs that received an interaction during the trial.

- Creating baselines using pre-post identification of customers as a POI will control for regression effect as these customers comprise the target group for casino interactions and include at-risk players some of whom will be engaging in extreme behaviours.

In the interim report the baselines were created based on selecting a random monthly sample of POIs over a 12-month period. For the purpose, of the current study only those POIs that were active players at the selected test sites prior to the start of the trial were included in the baselines to control for any differences in player profiles by venue.

To simulate what would occur if no interaction took place and to allow a six-month period for post comparison only those customers who were identified as a player of interest (POI) for the first time from December 2016 to April 2018 were eligible for inclusion in the baseline sample to ensure that all pre-post values were set before any interactions occurred at the trial locations and to control for seasonality effects. There were 1,418 qualified first-time POIs identified over the 16 trial sites during the specified period.

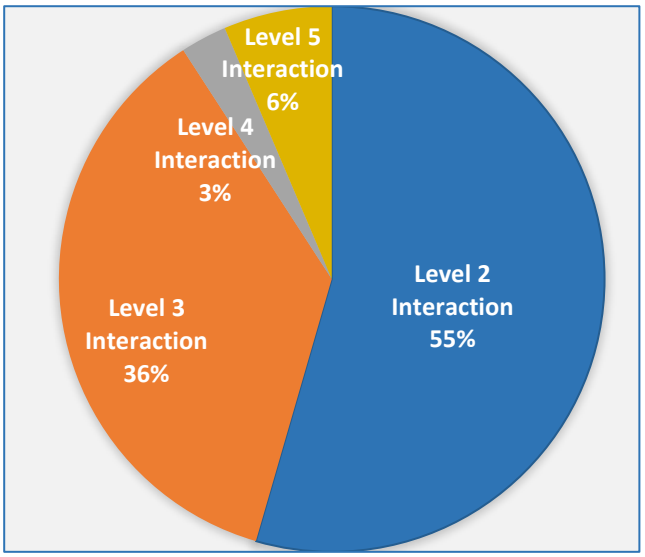
The pre values were set based on outcomes for each play indicator for each eligible POI for the three months prior to being identified as a POI (Months Pre 3-1) as compared to these same values for each indicator four to six months after identification (Months Post 4-6) using datasets from December 2016 to April 2018 (16 months). After cleaning, there were 812 active member customers playing at any of the 16 test sites that met the criteria for setting the baseline measures.

ALeRT UK Casino Customer Interaction Summary

From November 2018 to March 2020, UK casino operators taking part in the trial recorded almost 5000 player observations and interactions in the ALeRT BETTOR Protection System for 1708 unique players of interest (POIs).

There were 2,151 personal customer interactions (Level 2 or higher) conducted by casino staff with most of these interactions (55%; 1172) occurring at Level 2 consisting of general safer gambling information exchanges.

Figure 1: Level of Interaction (n=2151)



The remainder (45%) of the interactions recorded in ALeRT over the course of the trial involved more intensive contact with at-risk customers. Over one-third of customer interactions consisted of Level 3 player education and resources (36%; n=782), with 3% of interactions including

Level 4 player self-help support, materials, and referrals (n=59) and 6.4% leading to self-exclusion or barring (Level 5 Interactions).

For 96% of these interactions (n=2058) staff completed a detailed survey in ALeRT gathering information about various characteristics of the interaction).

The interaction survey data for eligible customers taking part in the Part A Interaction Impact Analysis (n=581) was then used in Part B of the study to assess the effectiveness of interaction characteristics in supporting changes in the key play indicators.

Sample Description

Table 2: Total and Eligible Sample Sizes

	Total Sample		Eligible Sample	
	Interactions	Unique Players	Interactions	Unique Players
Baseline (No Interaction)	1418	1418	812	812
Single Interaction	441	441	263	263
Multiple Interactions	931	300	581	233

There were three samples used in the analysis:

a) Baseline Sample (n=812) – Pre-post baselines for outcomes without an interaction.

b) Single Interaction Sample (n=263) – Pre-post outcomes for those receiving only 1 personal customer interaction during the trial.

c) Multiple Interaction Sample (n=581)– Pre-post outcomes for those receiving 2 or more interactions during the trial.

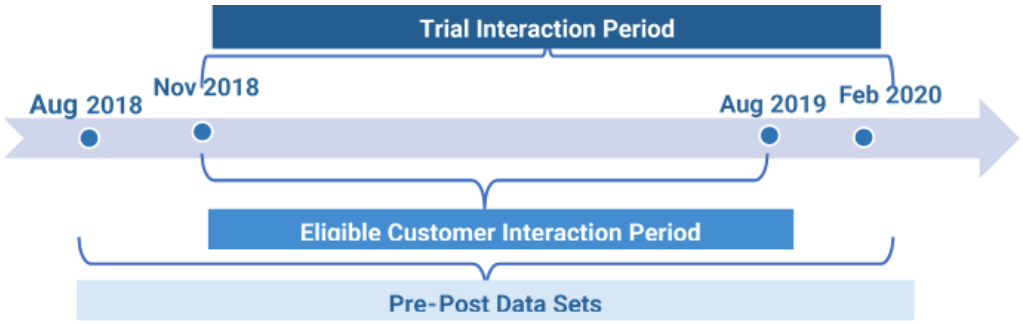
Table 3: Sample Procedures

Baseline Sample (No Interaction)
Simulates outcomes if no interaction took place for a 10-month pre-post comparison period for data over a 26-month window (September 2016 to October 2018).
1418 unique players were assigned as POIs for the first time from December 2016 to April 2018 by the Focal ALeRT algorithms at the selected test sites.
After cleaning, there were 812 active POIs who played in any of the 3 months before their first POI identification and also played in any of the four to six months after.
None of the data overlapped with interactions activity at any of the trial sites.

Table 3: Sample Procedures Continued

Single Interaction (Interaction Condition 1)	
1.	To ensure the analysis was not influenced by the COVID-19 pandemic shutdown, only data before March 01, 2020 were considered in the analysis.
2.	Players who had one level 2+ interaction before the March 01, 2020 were classified as single interaction players.
3.	Data from August 2018 to February 2020 were used to generate pre-post comparisons covering 3 months before the interaction and 6 months after the interaction for single interaction players. Interactions happened from November 2018 to August 2019 (total 441 interactions of 441 unique players).
4.	Active players who played in any of 3 months before their interaction and also played in any of the four to six months after interaction were considered as eligible sample, which was 264 eligible slots players with 264 interactions.
5.	One interaction with extreme values (outliers) was removed, producing a final eligible sample of 263 slots players with 263 interactions for single interaction impact analysis.
Multiple Interaction (Interaction Condition 2)	
1.	To ensure the analysis was not influenced by the COVID-19 pandemic shutdown, only data before March 01, 2020 were considered in this analysis.
2.	Players who had two or more level 2+ interactions before the March 01, 2020 were classified as multiple interactions players.
3.	Data from August 2018 to Feb 2020 were used to generate pre-post comparisons covering 3 months before each interaction and 6 months after each interaction for multiple interaction players. Interactions happened from November 2018 to August 2019 (total 931 interactions of 300 unique players)
4.	A maximum of 6 interactions was included per customer. Seventh and subsequent interactions were removed from the sample so that these interactions would not disproportionately affect the results of the analysis. Among the 300 unique players, 24 had more than 7 interactions, their seventh and subsequent interactions (n = 119) were removed resulting in a total remaining sample of 812 interactions for 300 unique players.
5.	Only active players who played in any of 3 months before their interaction and also played in any of the four to six months after interaction met the criteria for inclusion resulting in 234 eligible slots players with 584 interactions.
6.	Interactions with extreme values (outliers) were removed producing a final eligible sample of 233 slots players with 581 interactions for multiple interaction impact analysis.

Figure 2: Sampling Framework



Customers Stopping Play After an Interaction

One possible outcome after an interaction is that a player may stop playing either temporarily or longer term. As noted under Research Design it is important that the impact evaluation is restricted to active customers that continue to play after an interaction to assess changes in play behaviour that can be linked to the interaction. A player may have stopped for many reasons unrelated to the interaction and the inclusion of zero values for those who stopped will bring down post estimates regardless of their reasons for stopping. For example, a player may have stopped using their member card to avoid detection or even switched to another operator who is not as diligent in interacting with high-risk patrons.

Nonetheless, stopping behaviour after an interaction is a valid outcome and was compared to the baseline benchmarks to assess the potential role of interactions in leading to play cessation up to six months following an interaction.

Regardless of whether an at-risk customer received an interaction approximately 29% had stopped playing four to six months later (See Table 4 below). This level of churn among players of interest was the same for those receiving single or multiple interactions and did not differ from baseline.

Table 4: Percent of Unique Players Stopping Play at Baseline and after Interactions

	Unique Players (N)	Unique Players Active Pre	Unique Players Active Pre & Post	Unique Players Inactive Post (Drop)	% Drop from Pre to Post	% of Drop Self-Excluding Post
Baseline	1418	1137	812	-325	-28.6%	NA
Single Interaction	441	367	263	-104	-28.3%	12.5%
Multiple interactions*	300	266	188	-78	-29.3%	19.2%

* *The outcome was based on the last interaction for the those receiving multiple interactions*

Self-exclusion data was not available for the baseline players of interest, however, overall, 4.4% (n=28) of all POIs who were active in the three months before they received an interaction (n=633) had self-excluded following interaction and were no longer active during the post measurement period. This means that about one in every 23 customers receiving a safer gambling interaction had self-excluded

Among those who had stopped playing following the interaction the proportion of self-excluders was higher for those who received multiple interactions (19.2%) versus those receiving only a single interaction (12.5%). This difference was only significant at the 93% confidence level largely due to the small sample sizes (p=.07) but, nonetheless, suggests that about one in every five of those who stopped playing during the post period did so after receiving a Level 5 interaction.

Part A: Impact of Interactions for Key Play Indicators

Part A - Analysis

It was hypothesised that at-risk slot players who received a safer gambling interaction while at the casino would generally reduce their gambling activity and intensity of play leading to a larger decline in losses when compared to the changes in the gambling behaviour of at-risk players similarly identified as eligible for interaction (players of interest) but who did not receive a safer gambling interaction from casino staff.

Therefore, reductions were expected for each of the 10 indicators listed below especially monthly play hours generally and play hours during loss sessions due to the tendency for safer gambling messaging to focus on reducing time spent gambling and on discouraging players from chasing losses:

- Monthly Sessions
- Avg Play Hours per Session
- Monthly Play Hours in Loss Sessions
- Avg Spins per Play Hour
- Avg Turnover per Spin
- Avg Turnover per Session
- Avg Turnover per Play Hour
- Monthly Play Hours
- Monthly Turnover
- Monthly Wins and Losses

Based on the previous research conducted it was also hypothesised that reductions would be greater for those receiving two or more interactions.

To assess the impact of customer interactions pre-post values were generated for the three test groups (i.e., single interaction, multiple interactions, baseline-no interaction) for each of the ten play indictors.

For those at-risk customers receiving an interaction the average indicator value for the three months prior to the interaction was compared to the average indicator value four to six months following interaction. The changes in these mean values were then compared to pre-post values set for a random sample of POIs identified one year prior to the interactions to serve as a baseline for those who did not receive an interaction.

The baseline values were set for the three months before a player was identified as an at-risk POI by the models as compared to average play values four to six months following identification as a POI.

The Welch's F-test was used as an alternative to classical F-test as it does not require homogeneity of variance and is recommended as a preferred option for most social research and in-situ testing especially for testing for treatment differences in between group means.[31] One-tailed w-tests were used for hypothesis testing when the direction was specified versus two-tailed tests when there was uncertainty, or the outcome differed from the hypothesized direction, to compare the mean differences for each interaction group compared to baseline results.

First, play profiles for each the two test groups were compared (See Table 5 below).

Results are presented in Tables 6 and 7 showing the percentage change in pre-post values for each test group and the level of significance of the changes. In addition, changes in absolute values are presented in Table 8 for those with multiple interactions.

Part A – Results: Changes in Indicator Behaviour Due to Interactions

Comparison of Single versus Multiple Interaction Play Profiles

Before generating pre-post outcomes for each indicator analysis was undertaken to compare the profile of the two interaction segments to see if there were any differences between the two groups for any of the key indicators.

Table 5: Percent Change in Key Indicators at Baseline and After Single Interaction

Key Evaluation Indicators	At-risk POIs with Single interaction (n=441)	At-risk POIs with Multiple Interactions (n=300)	P value
Session Behaviours			
Average wagers/bets per hour	533	528	NS
Average turnover per wager/bet	£1.10	£1.26	0.06
Average hours per session	2.5	2.7	NS
Total monthly play hours in loss sessions	**13.1**	**20.6**	**0.000**
Session Outcomes			
Average turnover per play hour	£592.48	£694.38	0.07
Average turnover per session	£1,734.19	£2,152.49	NS
Play Frequency			
Total monthly sessions	**7. 1**	**8.5**	**0.02**
Total monthly play hours	**17.4**	**25.1**	**0.000**
Expenditure Outcomes			
Total monthly turnover	**£10,068.83**	**£17,044.85**	**0.003**
Total monthly wins and losses	**-£518.21**	**-£1,213.53**	**0.024**

There were no significant differences at the 95% confidence level (p<.05) observed for any of the within-session play variables including average play hours per session, number of wagers per hour or average turnover per wager, per session or per play hour. Both single and multiple interaction at-risk customers had similar play patterns during each session of play although turnover amounts were slightly higher for those customers receiving multiple interactions (p <.10).

In contrast, compared to single interaction customers those at-risk customers receiving two or more interactions had more monthly sessions (8.5 versus 7.1, p =.02) and especially more monthly play hours in a loss session (20.6 versus 13.1, p <.000) leading to more play hours per month (25.1 versus 17.4, p <.000), higher monthly turnover (≈£17k versus £10K, p =.003) and greater monthly losses (≈£1213 versus £518, p =.02).

Staff would be seeing these latter customers on site more often and have more opportunities for interacting. Additionally, higher frequency makes it easier for staff to observe other flags that confirm the player may be having problems whereas the risky session play of single interaction customers is less observable.

Changes in Indicator Behavior for Single Interaction Customers

Tables 6 and 7 compare the percentage change in pre-post slot play behaviours between those players received safer gambling interactions from staff, compared to the baseline sample who did not receive any safer gambling interactions. For each of the ten behaviour indicators, a negative difference indicates that the interaction sample changed their behaviour in the hypothesized direction more than was the case for the baseline sample.

Table 6: Percent Change in Key Indicators at Baseline and After Single Interaction

Key Evaluation Indicators	Baseline after POI % change (n = 812)	Single Interaction (n = 263)		
		After interaction % change	Estimated impact of interaction	P value
Session Behaviours				
Average wagers/bets per hour	1.7%	-0.5%	-2.2%	NS
Average turnover per wager/bet	-4.3%	-4.0%	0.3%	NS
Average hours per session	2.2%	1.9%	-0.3%	NS
Total monthly play hours in loss sessions	1.2%	-1.3%	-2.5%	NS
Session Outcomes				
Average turnover per play hour	-1.5%	-4.4%	-2.9%	NS
Average turnover per session	7.6%	2.6%	-5.0%	NS
Play Frequency				
Total monthly sessions	-2.1%	-5.4%	-3.3%	NS
Total monthly play hours	-2.0%	-7.1%	-5.2%	NS
Expenditure Outcomes				
Total monthly turnover	-6.3%	-6.2%	0.1%	NS
Total monthly wins and losses	**30.4%**	**-15.6%**	**-46.0%**	**0.02**

For at-risk customers receiving a single interaction during the trial there was only one significant change observed for any of the ten indicators when compared to the baseline outcomes. On average, players who experienced only one interaction reduced their monthly losses by 46% compared to baseline recording an average decline of 15.6% in losses four to six months following the interaction compared to a 30% increase in losses among at-risk customers who did not receive an interaction.

As noted under the section Assessing Changes in Indicator Behaviours much of the win/loss indicator's value is subject to randomness (luck). Compared to baseline there were no other significant changes observed for any of the other indicators in the hypothesised direction and, therefore, the loss results should be viewed with caution.

Changes in Indicator Behavior for Multiple Interaction Customers

Results differed strongly for at-risk customers receiving more than one staff interaction.

Table 7: Percent Change in Key Indicators at Baseline and After Multiple Interactions

Key Evaluation Indicators	Baseline After POI % change (n = 812)	Multiple Interactions (n = 581)		
		After interaction % change	Estimated impact of interaction	P value
Session Behaviours				
Average wagers/bets per hour	1.7%	-3.4%	-5.1%	0.085
Average turnover per wager/bet	-4.3%	**1.7%**	**6.0%**	**0.033**
Average hours per session	2.2%	**-12.8%**	**-15.1%**	**0.000**
Total monthly play hours in loss sessions	1.2%	**-20.9%**	**-22.0%**	**0.000**
Session Outcomes				
Average turnover per play hour	-1.5%	0.2%	1.7%	NS
Average turnover per session	7.6%	**-8.3%**	**-15.9%**	**0.010**
Play Frequency				
Total monthly sessions	-2.1%	**-11.2%**	**-9.1%**	**0.001**
Total monthly play hours	-2.0%	**-21.7%**	**-19.8%**	**0.000**
Expenditure Outcomes				
Total monthly turnover	-6.3%	**-18.0%**	**-11.7%**	**0.001**
Total monthly wins and losses	30.4%	-1.6%	-31.9%	0.108

There were significant changes observed for nine of the ten play indicators after multiple interactions, eight of which were in the hypothesized direction. The only exception was for average turnover per wager which only increased slightly (1.7%) but contrary to our hypothesis differed significantly from the small decline observed for at-risk players in the baseline group (-4.3%) (p = 0.033 two tailed).

If the player had more than one interaction during the trial period, they significantly reduced their average number of monthly sessions by 9.1% compared to baseline (p=.001). Session length also declined, on average, 15.1% (≈25.2 minutes) compared to baseline (p=0.000).

More importantly, the number of hours per month spent playing in loss sessions dropped by approximately 22% or about four hours and 30 minutes compared to baseline (p=0.000). These at-risk customers also reduced their speed of play with 5.1% (≈28) fewer wagers/bets per hour than was the case for at-risk customer without an interaction (p = 0.085).

Table 8: Relative Change in Key Indicators at Baseline and After Multiple Interactions

Key Evaluation Indicators	Baseline after POI	Multiple Interaction (n = 581)		
	Change (n = 812)	After interaction Change	Estimated impact of interaction	P value
Session Behaviours				
Average wagers/bets per hour	9.31	-18.65	-27.96	0.085
Average turnover per wager/bet	-£0.05	£0.02	£0.07	0.033
Average hours per session	0.05	-0.37	-0.42	0.000
Total monthly play hours in loss sessions	0.13	-4.17	-4.30	0.000
Session Outcomes				
Average turnover per play hour	-£8.59	£1.14	£9.72	NS
Average turnover per session	£91.40	-£174.26	-£265.67	0.01
Play Frequency				
Total monthly sessions	-0.12	-0.98	-0.85	0.001
Total monthly play hours	-0.28	-5.62	-5.33	0.000
Expenditure Outcomes				
Total monthly turnover	-£495.21	-£2836.79	-£2341.58	0.001
Total monthly wins and losses	£141.97	-£15.07	-£157.04	0.108

Although the amount risked (i.e., turnover per hour of play) was not significantly lower than the baseline, there was a 15.9% (≈ £-265.67) relative decline in turnover per session (p = 0.010). Monthly play hours declined by 19.8% (≈five hours and 20 minutes) compared to the baseline outcomes (p = 0.000) and average monthly turnover declined by 11.7% or about £-2,342 (p = 0.001). There was also evidence that interactions led to reduced losses of 31.9% or about £157.04 per month on average (p = 0.108).

Testing for Regression Effect

As a pre-caution additional analysis was performed to confirm that that results for the multiple interaction group were not influenced by regression effect (See under Research Design page 4).

Distributions were examined for those indicators influenced by frequency of play.

For one of the indicators, 'Changes in Monthly Play Hours' (-22%), there was evidence of potential regression effect that warranted further testing (See Figure 3). To test for the effect the baseline sample was selected to match pre-interaction values for the multiple interaction group serving as a benchmark for measuring pre-post change (n=581) (see Figure 4). There were no significant differences in the pre-benchmark values with a significant decline in post-interaction values observed only for the test group of multiple interaction customers as compared to the baselines for the non-interaction group (p<.000).

Figure 3: Comparison of Changes in Average Monthly Play Hours in Loss Sessions Before and After Interaction (n=581) versus Total Baseline (No Interaction; n=812)

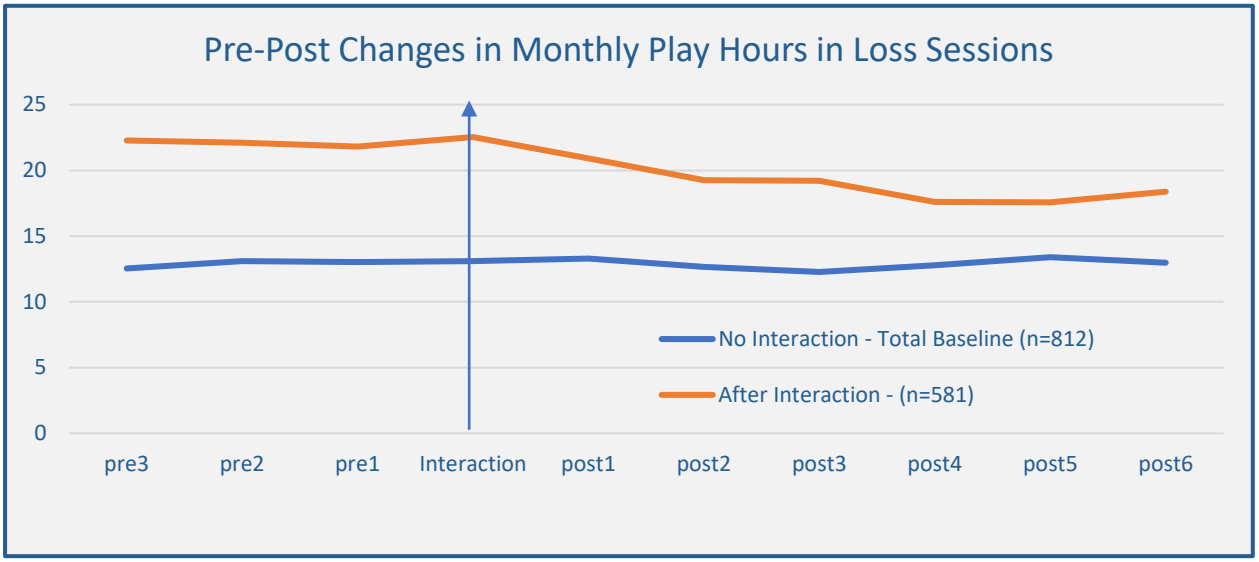
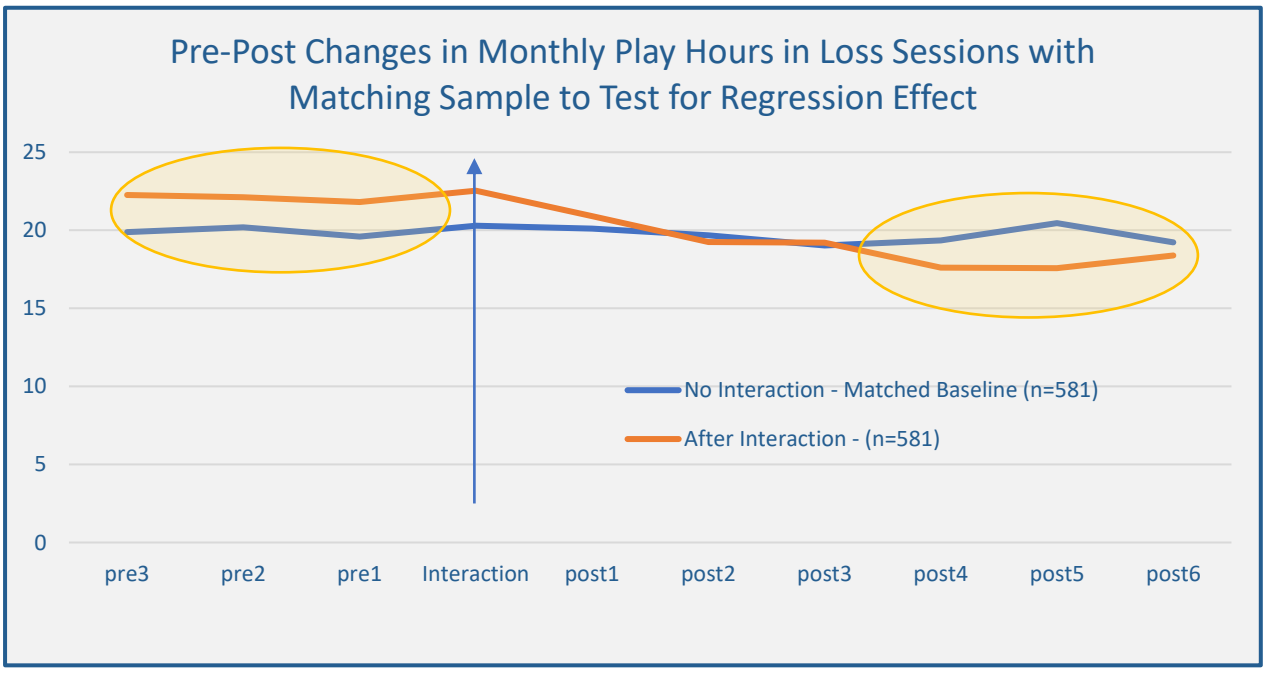


Figure 4: Comparison of Changes in Average Monthly Play Hours in Loss Sessions Before and After Interaction (n=581) versus Matched Baseline (No Interaction; n=581) to Check for Regression Effect



There were no significant differences in the pre-benchmark values with a significant decline in post-interaction values observed only for the test group of multiple interaction customers (-19.1%) as compared to the baseline (1.1) for the non-interaction group versus (-20.2%, p<.000).

Part A - Conclusions & Discussion

A minority of those experiencing difficulties with their gambling seek out any formal assistance in the UK or elsewhere in the world with estimates of about 3%[32] or 1 in every 50 problem gamblers in the UK having received treatment.[33] Stigma, privacy concerns, isolation, poor treatment outcomes for gamblers are all identified as barriers to help with most of those accessing services tending to wait until impacts are severe and at a crisis point.[34] [35] [36] This makes it challenging to assist people experiencing difficulties with their gambling and estimates suggest that as many as six other people are negatively affected by a single problem gambler thereby amplifying impacts at a community level.[37]

Consequently, the use of technology to help operators proactively identify and reach out to potential at-risk gamblers offers a significant opportunity for reducing and preventing harm especially when identification is linked to meaningful interactions and relevant resources.

In the current study safer gambling interactions did not discourage UK patrons from visiting the casinos. There were similar rates of player churn observed among all the player groups; whether they had received multiple interactions, a single interaction, or no interactions about 29% of at-risk customers were inactive four to six months after the pre benchmark period.

Although interactions did not cause at-risk customers to stop playing there was evidence that those who received more than one interaction were more likely to have stopped playing because they self-excluded with almost one in five (19.2%) having received a Level 5 Exclusion interaction before stopping.

For those who continued to play, customers receiving a single interaction were less likely to have changed their behaviour. This outcome may be a result of casino staff correctly assessing these players as being at lower risk during the initial interaction and consequently deciding these individuals would not benefit from further personal attention as much as those at-risk customers receiving multiple interactions.

The play profiles of those having single versus multiple interactions suggests this was the case as players having only one interaction, on average, played less frequently, and had significantly lower monthly losses than those receiving multiple interactions. This hypothesis was also supported by analysis of the interaction surveys: when staff noted that a player had exhibited other observable risk cues during the first interaction, these players were more likely to have subsequent interactions (1.2% of the single interactions versus 5.2% of first interactions for multiple interactions).

However, the in-session play behaviour of at-risk customers receiving only a single interaction did not differ significantly from the other at-risk customers. These risky behaviors are less easy for staff to observe and therefore to use to confirm a player's risk status. Interacting with these less visibly obvious at-risk players may be especially helpful

for prevention purposes insofar as staff may be able to address play habits contributing to risk before increased frequency of play leads to harms.

Whatever, the case it appears that staff were effective in prioritising those needing additional support as the outcomes for at -risk customers receiving more than one interaction were significantly different.

Overall, players who had multiple interactions with casino staff reduced their monthly play hours by 5.33 hours when compared to the baseline. They had fewer sessions each month, and when they did play, they decreased the length of their sessions by 25 minutes. Most importantly, they reduced the hours played in loss sessions each month by 4.30 hours which accounts for 81% of the reduction in monthly play hours. This suggests that many took the advice of staff to stop chasing losses, to recognize their limits, and to end losing sessions before they overspent.

Once these players began a session, their behaviours did not change as significantly. Their turnover per play hour was unchanged; however, the evidence suggests that they slowed their speed of play with an average reduction of 28 wagers per hour of play. It appears that they may have increased their rate of wagering as turnover per spin went up slightly £0.07. We have speculated that a higher proportion of their time was spent in winning sessions and therefore they may have increased their wagering rate when in a winning position. Fortunately, these changes in behaviour still led to reduced turnover per session and monthly turnover, along with the reduction in monthly play hours.

Of the ten indicators, all but monthly wins and losses occurs as a direct result of a decision made by the player. Win/losses is subject to randomness and, consequently, the variance is higher and is not a direct result of the changes in behaviours after an interaction. There was a relative reduction in losses of £157.04 which we assume is mostly likely due to a reduction in hours played in loss sessions; this change is marginally significant. However, a confidence level of 89% for this indicator is good evidence that interactions helped players reduce losses.

Part B: Making Interactions More Effective – The Impact of Interaction Characteristics on Play Indicators

Part B - Analysis

Only interactions (n=581) with active players who received more than one interaction were included in the analysis as there were no significant changes associated with single interactions in the current study.

Behavioural change variables were created for each interaction based on the outcomes for the 10 play indicators in Part A. The change variables were based on the difference between the average indicator values for the pre3 to pre1 months and the average indicator values for the post4 to post6 months.

Staff taking part in the trial also completed an interaction survey in ALeRT comprised of 16 questions and an observation checklist summarizing the key features of each interaction and this data was used to generate 36 interaction characteristics variables. (See Table 9)

The interaction characteristic variables were correlated with the change variables using one tail probabilities to identify significant reductions in play behaviours ($p < 0.05$). If a significant change in behaviour occurred contrary to the hypothesised direction, then the two tailed probabilities were also reported.

Based on the interaction survey data collected it was hypothesized that the following characteristics would lead to a more effective interaction in terms of reducing play behaviours and reducing spending:

- Higher level interactions
- More frequent interactions,
- If the player was flagged as higher risk,
- If a follow up interaction was recommended and if the follow up was completed,
- If the player requested assistance,
- If the player was provided with information, self-help materials, or referrals,
- Interaction length more than five minutes,
- If the player responded favourably to the interaction,
- If staff felt the interaction was helpful,
- If the player exhibited other observable social, behavioural emotional or visual cues associated with risk due to gambling.

It was also hypothesized that the following characteristics would lead to a less effective interaction in terms of reducing play behaviours and reducing spending: Interactions lasting five minutes or less, or if the player responded negatively to the interaction.

No hypotheses were generated for the following characteristics: whether the player of interest was identified by the ALeRT system or by staff, the seniority of the person conducting the interaction or a perceived neutral response by the player to the interaction.

Part B – Results

Table 9: Correlation Between Changes in Key Indicators & Interaction Characteristics (n =581)

Key Indicators / Interaction Characteristics	Monthly sessions	Avg hours per Session	Total monthly Play hours in loss sessions	Average wagers per hour	Average turnover per wager	Average Turnover per Session	Average Turnover per Play Hour	Monthly Play Hours	Monthly Turnover	Monthly Losses
Interaction Level (2 - 5)	-	-	-	-0.083	-	-	-0.116	-	-	-
Number of Interactions (2 - 6)	-	-	-0.101	-	-	0.094	0.098	-0.114	-	-
Order of Interactions (1 - 6)	-0.079	-	-	-	0.119	-	0.117	-	-	-
Identified by ALeRT versus Staff/Referral	-	-	-	-0.148	-	-	-	-	-	-
A Manager Alert entered into ALeRT	-0.085	-	-0.100	-	-	-	-	-0.081	-	-
Player Flagged as higher risk	-	-	-	-	-	-	-	-	-	-
Recommend Staffs to Follow Up After	-	-	-0.068	-	-	-	-	-0.070	-	-
Follow Up Completed	-	-0.068	-0.072	-	-	-	-	-0.072	-	-
Interacted by General Manager	-0.174	-	-	-	-	-	-	-	-	-
Interacted by Gaming Manger/PML	-	-	-	-0.081	-0.085	-	-0.150	-	-0.075	-
Interacted by Slot Host	-	-	-	-	0.092	-	0.111	-	-	-
Interacted by Other Staff	-	-	-	0.122	-	-	0.123	-	-	-
Player Requested Assistance	-	-	-	-	-	0.090	-	-	-0.120	-
Provided Information to Player	-	-	-	-	-	-	-	-	-	-
Provided Self Help Materials to Player	-	-	-	-	-	-	-	-	-	-
Provided Referral to other Resources for Player	-	-	-	-	-	-	-0.077	-	-	-
Up to Five Minute Interaction	0.096	0.142	0.138	-	-	-	-	0.118	-	-
Over Five Minutes Interaction	-0.076	-0.084	-0.091	-	-	-	-	-0.070	-	-0.093
Player Responded Favourably	-	0.124	-	-	-	-	0.112	-	-	-
Player Responded Unfavourably	-	-	-	-	-	-	-	-	-	-
Player Responded Neutral	-	-	-	-	-0.117	-0.090	-0.130	-	-	-
Player Declined Assistance	-	-	-	-	-	-	-	-	-	-
Staff Feels Interaction was Helpful	-	-	-	-	-	-	0.089	-	-	-
Appeared to be At Risk	-	-	-0.140	-	-0.088	-	-	-0.105	-	-
Staff Noted Cues Indicating Risk	-0.110	-	-0.190	-	-	-	-	-0.159	-	-
Visual Cue 1: Gambled for a Long Time Without a Break	-0.110	-	-0.190	-	-	-	-	0.159	-	-
Visual Cue 3: Gambles Long Hours	-0.106	-0.109	-0.203	-	-	-	-	-0.192	-0.081	-
Visual Cue 5: Continues to Gamble After Sustaining Large Losses	-	-	-0.104	-	-	-	-	-	-	-
Social Behaviour Cue 3: Person is Impolite to Staff (Sullen, Demanding, Rude or Arrogant)	-0.082	-	-0.083	-	-0.101	-	-	-0.085	-	-
Emotional Responses Cue 4: Seems Angry	-	-	-0.120	-	-	-	-	-0.110	-	-
Verbal Cue 1 Blames the Venue or Machines for Losses	-0.098	-0.081	-0.214	-	-	-	-	-0.180	-	-
Verbal Cue 2 Complains about Losing to Venue Staff	-0.118	-0.094	-0.218	-	-	-	-	-0.196	-	-

- = *No Significant Difference p>.05* | = *Significant Negative Correlation p<.05* | = *Significant Positive Correlations p<.05*

Interaction levels

Interaction levels included Level 2: General Player Education, Level 3: Self-Management information & Resources Level 4: Self Help Materials & Referrals excluding Level 5: Voluntary and Involuntary Exclusion (i.e., banning or barring) if the player stopped playing. Higher level interactions resulted in players being more likely to reduce their speed of play with lower average wagers per hour ($r = -.083$, $p = .023$) and, therefore, were more likely to have a lower average rate of turnover per hour of play ($r = - .116$, $p = 0.003$).

Number of Interactions

The number of times casino staff interacted with a player in this data set ranged from two to six. Interactions with players who were engaged with more often were more likely to lead to reductions in monthly hours in loss sessions ($r = -.101$, $p = 0.008$) leading to a greater likelihood of reduced average monthly playing hours ($r = -.114$, $p = 0.003$). However, they also were more likely to have a higher intensity of play (i.e., higher turnover per session) ($r = .094$, $p= 0.012$) and higher turnover per hour of play ($r = .098$, $p = 0.009$) when compared to those with fewer interactions. It is important to note that those who had more interactions may still have reduced their turnover per session and per hour of play compared to the pre benchmarks, it is just that they did not decline as much as those who had fewer interactions.

Order of Interactions

Later interactions were associated with reductions in the number of sessions as compared to impacts for earlier interactions ($r = -.079$, $p=0.028$) but again the rate of play during the subsequent sessions tended to intensify with correlations observed for increases in average turnover per play hour ($r = .117$, $p=0.005$) and for average wagers per play hour ($r = .119$, $p=0.004$). It may be that the cumulative effect of having additional interactions assisted at-risk players in reducing the frequency of their slots play but that casino staff may then want to start shifting attention to moderating behaviour during the session to ensure players do not offset reductions in gambling frequency by increasing their betting rates.

Method of Identification

Interactions could be triggered by the ALeRT system identifying a customer as a player of interest (POIs) or by casino staff and others referring a customer for interaction. If the interaction was triggered by the ALeRT system, there was a greater reduction in monthly average wagers per hour post interaction ($r = -.148$, $p < 0.000$).

If a 'manager alert' was created in the ALeRT system after the interaction, then the player had a larger decline in average monthly sessions ($r = -.085$, $p = 0.02$), total monthly hours in

loss sessions (r = -.100 p = 0.008), and total monthly play hours (r = -.081, p = .026) compared to outcomes when no manager alert was created.

'Flagging' a player for additional attention in ALeRT was not associated with any relative improvement in play behaviours compared to those who were not flagged. It is not clear if this is due to lack of follow-up action or because staff were uncertain how to use the feature effectively during the trial to escalate assistance. Alternatively, it may be that flagged POIs are those that have advanced risk and may be less willing or able to moderate their play on their own.

Follow Up Recommendation

Those players whose interaction resulted in a specific recommendation for follow up at some time in the future were subsequently more likely to reduce their play hours in loss sessions (r = -.068, p = 0.025) and their monthly play hours (r = -.070, p = .023) when compared to those players whose interaction did not include a follow up recommendation. If the follow up was completed the player was more likely to reduce the length of their sessions (r = -0.068 p = 0.025), monthly hours in loss sessions (r = -0.072 p = 0.022) and monthly play hours (r = -0.072 p = 0.022) suggesting the importance of follow-up in supporting positive changes in the key indicator behaviours.

Staff Level of Seniority

If the person interacting with the player was a General Manager then the player was more likely to subsequently reduce the average number of sessions each month (r = -.174, p < 0.000). If the employee interacting with the player was a Gaming Manager or PML (Personal Management Licensee) then the player was more likely to reduce their rate of play and expenditure including average wager per hour of play (r = - .081, p = .030), turnover per wager (r = -.085, p = .025), turnover per hour of play (r = -.150, p < 0.000), and average monthly turnover (r = -.075, p = 0.042).

If the staff member interacting with the player was a slot host, the player did not decrease their rate of play including turnover per hour of play (r = .111, p = 0.010 two tailed) and turnover per wager (r = .092, p = 0.032 two tailed) as much as when other staff interacted with the player. Security and other floor staff whose title does not fall into the categories above had less influence on players in reducing average wagers per hour of play (r = 0.122 p = 0.005) and turnover per play hour (r = 0.123 p = 0.004).

Request for Assistance

If the player requested assistance then monthly turnover subsequently decreased (r = -.125, p = 0.002) more than for those players who did not request assistance. Nonetheless, their average turnover per session was more likely to increase (r = .090, p = 0.037) again

suggesting that reducing expenditure and frequency of play may cause some at-risk customers to increase their rate of gambling during a session.

Length of Interaction

If the interaction was five minutes or less the player was less likely to reduce their number of monthly sessions (r = .096, p = .010), reduce their monthly play hours (r = .118, p = .002), reduce their total hours played in losing sessions (r = .138, p = 0.001), or reduce the length of their sessions (r = .142, p = .001) when compared to longer interactions and those interactions where the length of session was not recorded.

Those whose interaction lasted longer than five minutes were more likely to reduce their number of monthly sessions (p = -.076, p = .034), reduce the length of their sessions (r= -.084, p = 0.021), reduce monthly play hours in loss sessions (r = -.091, p = .014), reduce their monthly play hours (r = -.070, p = 0.045), and reduce their monthly losses (r = .093, p = 0.013). This indicates the longer interactions are likely to achieve lasting changes in the key indicator behaviours.

Information

There was no significant difference in behaviour in the current study when the player was provided with information or self-help materials during the interaction. If the player was provided with a referral to other resources then there was a greater reduction in their turnover per hour of play (r = -.077, p = 0.037). This may be related to the relevance of the materials provided and should continue to be monitored as operators develop additional resources.

Player Response to Interaction

Players who, in the opinion of those conducting the interaction, responded positively to the interaction, were less likely to subsequently reduce the length of their sessions (r = .124, p = .004) and less likely to reduce their turnover per hour of play (r = .112, p = 0.009) compared to those who responded neutrally and unfavourably. There were no significant differences in changed play behaviours associated with responding negatively to the interaction. Those who were perceived to have responded neutrally to the interactions were most likely to reduce their rate and speed of play including turnover per wager (r = -.117, p = 0.003), turnover per session (r = -.090, p = 0.018), and turnover per hour of play (r = -.130, p = .002).

Staff Perceptions

If the person conducting the interaction deemed it to be helpful, then the player was more likely to have higher turnover per hour of play (r = .089, p = .040) in the post four to six months compared to those interactions where the staff member did not feel the interaction

was helpful. If the person conducting the interaction felt the player was at risk due to gambling, then the player was more likely to reduce their total hours playing in loss sessions (r = -.140, p = .001), reduce their turnover per spin (r = -.088, p = .021), and reduce their monthly play hours (r = -.105, p = .008).

If those conducting the interaction saw any visible cues associated with problem gambling, then the player was more likely to reduce the number of monthly sessions (r = -.110, p = 0.006), reduce their monthly play hours in loss sessions (r = -.190, p < 0.000), and reduce their total monthly play hours (r = -.159, p < 0.000). Specifically, if they saw the player gambling for a long time without a break then they were more likely to reduce their monthly sessions (r = -.110 p= 0.006), monthly play hours in a loss session (r = -.190 p = 0.000) and reduce monthly play hours (r = -.159 p = 0.000).

If staff saw players who were impolite to staff, acting sullen, demanding, rude or arrogant, then after the interaction such players were more likely to have reduced their monthly sessions (r = -0.082 p = 0.029), monthly play hours in loss sessions (r = -.083 p = 0.027), turnover per spin (r = -.101, p = .010), and monthly play hours (r= -.085, p = 0.030).

If, prior to the interaction, the player was observed to be angry, they were more likely to subsequently reduce their monthly play hours in loss sessions (r = -.120, p = 0.003) and monthly play hours (r = -.110 p = .006).

If staff also observed that the player of interest was gambling for long hours and then interacted with them, the player was more likely to reduce their average monthly sessions (r = -.106, p = 0.07), reduce their length of sessions (r = -.109, p = 0.006), reduce their average monthly play hours in loss sessions (r = -.203, p < 0.000), average monthly play hours (r = -.192, p < 0.000), and average monthly turnover (r = -.081, p = 0.030).

Loss Behaviour

If staff observed that a player of interest continued to gamble after sustaining large losses, they were more likely to reduce their monthly play hours in loss sessions after the interaction (r = -.104 p = 0.003).

If staff observed the player blaming the venue or machines for their losses, after the interaction they were more likely to reduce their number of sessions (r = -.098, p = .011), hours per session (r = -0.081 p = 0.031), monthly play hours in loss sessions (r = -.214, p < 0.000), and monthly play hours (r = -.180, p < 0.000).

If a customer receiving an interaction complained about losing to venue staff, after the interaction they were more likely to have reduced their number of sessions (r = -.118, p = .003), length of sessions (r = -.094, p = 0.015), monthly play hours in loss sessions (r = -.218, p < 0.000), and monthly play hours (r = -.196, p < 0.000).

Part B – Conclusions & Discussion

In the current study we found that higher-level interactions tended to be more effective in slowing a gamblers speed of play, thus, leading to lower turnover per hour. This lends support to the concept that advancing through various levels of interactions with a player, as detailed in ALeRT, is likely to result in improved outcomes for at-risk players. This is especially important as there were several other interaction characteristics that facilitated change in other key indicators such as frequency of play and chasing losses, but such declines were sometimes accompanied by increases in speed of wagering, gambling intensity and betting rates during a session.

For example, as the number of interactions increased at-risk customers were more likely to stop playing when in a loss session, resulting in a reduction in monthly play hours. Likewise, the order of interactions was also found to be influential with later interactions more likely to be associated with decreases in the number of monthly sessions. Yet, in both cases as the average turnover per play hour went up, so did average turnover rates per session or per wager. It is possible that those who required continued monitoring were those less likely to reduce their level of gambling after interactions. The results showed that there were significant changes in pre-post play behaviours that resulted in fewer monthly play sessions (a more visible behaviour), but this was then compensated by players increasing their rate of play (less observable by staff).

It may be that the cumulative effect of having additional interactions assisted at-risk players in reducing the frequency of their slots play and helped them to stop chasing losses. Once this happens casino staff may then want to shift attention to helping customers moderate behaviour during the session to ensure players do not offset gambling reductions by increasing their betting rates. As higher-level interactions are more likely to reduce intensity and speed of play the results indicate that it may be helpful to progress players through the interaction levels (e.g., Levels 2-4) as staff continue to engage with a customer.

Regardless, continued interactions with players reduced their chasing behaviour and helped them to gamble under control. Contrary to expectations, gambling intensity increased for some of these at-risk customers as frequency and length of sessions declined suggesting this is a good point to elevate interactions with the customer.

Interactions that received a manager alert (and presumably often led to a subsequent interaction with management) produced greater reductions in monthly sessions, play hours in loss sessions and monthly play hours. As well, if the staff member recommended a follow up interaction the player was more likely to have reduced monthly play hours and monthly turnover compared to when no follow up was recommended. The results suggest two possibilities: 1) Staff were effective in identifying and referring those most likely to

benefit from follow up action; and/or 2) Management follow-up was associated with improved player outcomes.

Creating managerial alerts and recommending follow up interactions appeared to successfully identify those players who would benefit from higher level management support. Clearly, these are important interaction practices and should be utilized by staff to leverage better outcomes for at-risk players.

Interactions conducted by General Managers were more effective in having players reduce monthly sessions. In contrast, interaction by Gaming Managers and PML's were more inclined to lead to reductions in monthly sessions, as well as, reduced speed of play (wagers per hour) and a decreased rate of wagering (turnover per wager). This, in turn, led to reduced turnover per hour of play and average monthly turnover. It is unclear whether Gaming Managers were better prepared, more persuasive in encouraging players to gamble responsibly or had greater authority speaking as a senior staff member to the player. In any case, having a manager speak to players suspected of being at greater risk was an effective strategy for supporting positive customer change.

If the staff member interacting with the player was a slot host or other floor staff, the players did not decrease their rate of play (i.e., turnover per hour of play and turnover per spin) as much as when other staff interacted with the player. Slot hosts and other staff still have an important role in first contacts, assessing the risk level of the player and influencing players to gamble responsibly. It is likely that managers are required to deal with more advanced levels of risk and, therefore, engage in more intensive interactions with customers leading more often to positive changes in play patterns.

In the current study, providing players with information and self-help materials did not make the interaction more or less effective yet those players who were referred to other resources were more likely to reduce their turnover per play hour. This suggests there may be opportunities for improving on-site casino materials and player tools to support players in self-managing their activity at the casino.

Interactions lasting less than five minutes were less likely in the current study to lead to play reductions compared to those interactions that were longer. These brief interactions may still contribute to long-term changes, just not as strongly as longer more intensive safer gambling exchanges. Longer interaction times resulted in players being more likely to reduce the number of monthly sessions, monthly play hours, the length of sessions, the length of loss sessions and the amount spent during those months the players were active. These individuals tended to have fewer visits to the casino and played less when they were there, although their behaviours while gambling did not change.

Length of interactions was the characteristic that had the second highest impact on play behaviours. Either staff were adept at identifying those players who needed help and would, therefore, be more likely to respond with an extended intervention, or the interactions lasted longer because the player recognized that they needed help and was receptive to the interaction. Subsequently, they were willing to have a longer conversation, and this level of engagement was more effective in motivating the player to change their gambling behaviour.

Regardless of why they were more effective, it can be concluded that longer safer gambling engagements with at-risk customers were more effective in achieving change for harm reduction purposes. Brief interactions open the door for having these more intensive discussions that can then be staged over time to support long-term change in risky behaviours. It may also be that brief interactions are more suitable for prevention purposes and help stop play from escalating rather than reduce the activity.[38]

Contrary to our hypotheses, those at-risk players who responded positively to the interaction were more likely to have increased their session length and turnover per play hour after the interaction. Moreover, if staff rated the interaction as helpful the player was more inclined to have had an increase in their rate of play (i.e., turnover per play hour). We speculate that when the player responded positively the staff member may have rated the interaction as more helpful. These players of interest may also have been at lower risk initially and had not yet started experiencing harms associated with their risky play. Monitoring key indicators following interactions can alert staff to any changes that might be useful talking points during follow-up contact.

A negative response towards the interaction was not associated with any additional increases or decreases in the indicator behaviours while those who were perceived by staff as being neutral were more likely to have reduced their turnover per wager leading to reduced turnover per play hour, and reduced turnover per session. Those who were at risk but did not react negatively to the interaction were deemed to be neutral by the staff. It may be that this group was already concerned and, although not enthusiastic, they were more receptive to the information (i.e., did not have counter arguments or express negativity) and subsequently were more likely to be open to the support provided and change their behaviour. This suggests that a neutral response to an interaction should not be viewed as a failed interaction. This is reinforced by the finding that players who initially declined assistance were more likely to reduce their turnover per hour of play. It may be that the interaction was helpful regardless of the lack of additional assistance provided.

The chances of a player reducing their play behaviours was highest when staff judged the player to be at risk, based on observable cues known to be associated with risk due to gambling. [39] [40] [41] Staff were provided with a list of visible social, emotional, behavioural, and verbal cues to check off in the interaction survey included in the ALeRT system if such cues

were witnessed either prior to or during the interaction. It appears that staff observations played a key role in identifying those most likely to be responsive to modulating their play behaviour.

When casino staff judged the player to be at-risk, and also noticed telltale cues, specifically: visual cues - gambled **long hours without a break**, gambling **long hours**, or gambling **after large losses**; social behaviour cues - person is **impolite to staff** (sullen, demanding, rude or arrogant); emotional behaviour cues - seems **angry**, verbal cues - **blames the venue** or machines for losses, and **complains about losing** to venue staff, the player subsequently was more likely to reduce monthly play hours and average play hours in a loss session after interaction. In the four to six months after interaction the players were more likely to have fewer monthly sessions; have shorter sessions, and reduced turnover per wager. Some players were more likely to reduce monthly turnover.

These results highlight the importance of training staff to record observable cues and use them to assess a player's risk in order to focus staff attention on those in most need of personal attention and support (i.e., an interaction). The cues mentioned above are not exhaustive including only seven out of a much larger inventory of visible cues listed in the ALeRT post interaction survey, but they are the ones the staff found most noticeable when observing players and interacting with them.

With further training staff can look for and recognize the presence of other cues that confirm a player of interest may be at elevated risk for gambling harm and therefore are predictive of effective interaction outcomes with at-risk players.

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