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Evaluation of a Pilot Self-Exclusion Website for NSW Gaming Machine Venues

Final Report

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Evaluation of a Pilot Self-Exclusion Website for NSW Gaming Machine Venues: Final Report

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Executive Summary

Background and Aim

Self-exclusion is an important harm minimisation strategy available to Australians experiencing gambling harm. Individuals can voluntarily impose a ban on their entering clubs, pubs/hotels, and casinos. However, this program has a relatively low uptake. Major barriers to enrollment in self-exclusion programs are procedural difficulties and the shame and embarrassment individuals experience when registering through one or more face-to-face meetings typically hosted at gaming machine venues. This research project piloted an online self-exclusion pathway designed to streamline the ease of registration processes and overcome known barriers with the objective of increasing self-exclusion uptake.

Research Approach

This research adopted an iterative co-design approach to developing and evaluating a self-exclusion website. Co-design methods are frequently used in eHealth domains to ensure that new services align with end users' needs and expectations. Key stakeholders and self-exclusion consumers were heavily involved throughout the research and design process with study findings directly informing web development outputs. Studies incorporated a mixed-methodological design; qualitative and quantitative findings were triangulated to reach more valid research conclusions about website requirements, usability, and acceptability.

The research protocol was approved by The University of Sydney Human Research and Ethics Committee (HREC). The overarching research framework and individual study methodologies were pre-registered on the Open Science Framework for transparency and to increase confidence in the findings.

Phase 1: Requirements Analysis

A qualitative requirements analysis was conducted involving focus groups and interviews with 25 participants from four key stakeholder groups: self-exclusion end users, gambling counsellors, venue staff, and policy makers. A qualitative content analysis of the transcription data revealed the following key findings:

- The website should be extremely simple and seamless for end users to access and navigate. Simplicity, however, must be balanced against rigorous data security measures.
- End users should be able to tailor the self-exclusion agreement to match personal needs and preferences.
- The website design and layout should convey a message of legitimacy and credibility (i.e., clean, professional, official), and establish an encouraging environment through various media formats (i.e., images, video, animation).
- Content relating to additional help resources should be incorporated into the website.
- The socio-legal environment, marketing strategy, and an in-depth understanding of end user characteristics are important factors to the success of implementation.

Alpha Website Development

Core functioning of the 'MySelfExclusion' website was developed in the initial alpha version. This included a fully online self-exclusion application procedure. Web features and content were informed by the phase 1 research findings, in addition to the research team's existing knowledge of self-exclusion processes and relevant literature on the topic. Multiple system

bugs and errors were present in the alpha version and not all potential features were included.

Phase 2: Usability Testing

Study two involved an evaluation of the alpha site's usability among N=10 self-exclusion consumers in a semi-controlled online test environment. Usability refers to the ease with which the system can be learned and used to successfully register for self-exclusion. A triangulated analysis of observational, quantitative survey, and qualitative thinking aloud data revealed that:

- The self-exclusion process took on average 15-16 minutes.
- Most tasks were completed without error, except some aspects of the structure for entering personal details and in selecting venues.
- An overall system usability score of 84 out of 100 (i.e., 'highly usable') was obtained, which is considerably higher than the minimum acceptable usability cut-off of 68.
- Qualitative results revealed participants' overall positive response to the website, in addition to providing further context and user-suggested solutions to usability issues.
- 28 mostly minor usability issues were identified, and corresponding solutions were mostly simple to implement.

Beta Website Development

Focus of the beta development phase was primarily directed toward correcting user-identified errors and the refinement of existing features. The majority of upgrades were designed to facilitate a more seamless completion of the self-exclusion application (i.e., entering personal details and selecting venues). Written content throughout the entire site was revised and condensed. Some new features were added to the website including an instructional video and a multilingual plugin tool.

Phase 3: Acceptability Evaluation

Study 3 involved an evaluation of the beta site's acceptability among N=20 self-exclusion consumers in an ecologically valid test environment. Acceptability is a multi-dimensional construct incorporating usability and other predictive factors of future use. Measurement of acceptability in the current study was based on an extended Technological Acceptance Model (TAM; Davis, 1989). Descriptive-level statistical analysis of survey response data combined with an informal analysis of open-ended responses showed that:

- Consistent with our predefined acceptability threshold, the largest proportion of end user ratings pertaining to core website components ranged between 'somewhat' and 'very positive'.
- The largest proportion of end user responses for all TAM dimensions of acceptability fell under strongly agree which approximates strong acceptability, except for perceived security (somewhat agree).
- Three quarters of participants were either 'somewhat' or 'far more satisfied' with their experience of using the MySelfExclusion website as compared to the ClubsNSW MVSE program.
- Qualitative response data strongly supported the potential utility and need for implementation of a self-directed web-based exclusion system. Criticism tended to focus on broader problems with self-exclusion systems rather than this specific website.

Conclusion

This research represents the formative steps in the development of an online self-exclusion portal for gaming machine venues in NSW. Overall research findings provided a guiding framework for a co-designed self-exclusion website that meets the needs and expectations of key stakeholders and end users. Core stakeholder-defined requirements were incorporated into the development of a self-exclusion website which subsequently showed good usability and acceptability among self-exclusion consumers. The pilot MySelfExclusion website interface may be reproduced for implementation using a high-performance host server and a secure database with large storage capacity. We recommend progressing the self-exclusion website toward implementation by focusing on the development of appropriate back-end systems. Continued evaluation of the new web-based self-exclusion system is important to monitor its performance and to measure end user outcomes.

Project Rationale and Objectives for Website Design and Evaluation

This project aims to pioneer a self-directed online platform for self-exclusion registration from land-based gambling venues in NSW, with the capacity to be integrated with existing self-exclusion databases for both land-based and online gambling forms. Ultimately, this website would enable individuals who gamble to self-exclude from clubs, pubs/hotels, and casinos using their personal internet device and unassisted by venue staff or a counsellor.

Currently in NSW, people are required to self-exclude face-to-face with staff at a gaming venue or with a gambling counsellor. Online registration is a natural progression for self-exclusion programs, particularly given Australians increasing reliance on the Internet to complete everyday tasks. Self-exclusion end users in NSW as well as in other national and international jurisdictions have expressed a desire for online registration options. Availability of a fully web-based registration system is expected to increase the uptake of self-exclusion statewide and positively impact gambling harm minimisation efforts.

This project involved a systematic research process including iterations between three evaluation phases and two web development phases aimed at creating a co-designed pilot self-exclusion website as summarised in Table 1 below.

Table 1. Rationale and objectives per project phase

Phase	Rationale	Objectives
Study 1	This web-based service should meet the needs and expectations of key stakeholders and self-exclusion consumers.	Focus groups and interviews examining: <ul style="list-style-type: none"> - Stakeholder expectations of website features, functionality, and general user experience - Practical issues around website development and implementation
Alpha Development	The alpha version of the website should include its core functionality for usability testing purposes.	<ul style="list-style-type: none"> - Build core functions (i.e., online self-exclusion registration process) - Setup essential website hosting, management, and security features - Develop priority stakeholder-defined features
Study 2	It is important that end users are able to navigate and use the website unassisted to successfully complete a self-exclusion application	<ul style="list-style-type: none"> - Determine user completion rate - Identify specific usability issues/errors affecting end user performance and satisfaction - Directly elicit suggestions for website improvement
Beta Development	The beta version of the website should incorporate upgrades based on end user feedback. It should provide an accurate preview of how the 'release candidate' version will look and perform.	<ul style="list-style-type: none"> - Implement technical solutions and updates to rectify user-identified usability issues. - Refine existing aesthetic and functional website elements to improve overall user experience - Incorporate new website features to improve overall user experience
Study 3	The acceptability of a website provides an indication of how likely end users will be to use the system in real life affecting is overall rate of uptake.	<ul style="list-style-type: none"> - Measure overall satisfaction with the self-exclusion website - Determine the degree to which the website meets end users' needs and expectations - Gauge the likelihood of end users utilising the self-exclusion website in real life

General Background

Gambling is a common recreational activity for many Australian adults, with most participants spending within their affordable limits. However, widespread availability of gambling opportunities is accompanied by deleterious consequences experienced by a small proportion of the community. Problem gambling leads to a spectrum of harms that fall under multiple dimensions, including financial hardship and debt, interpersonal conflict, poor physical and psychological health, low productivity and employment dismissal, and in some instances, criminal activity (Langham et al., 2016; Shannon et al., 2017). According to the Household, Income and Labour Dynamics in Australia (HILDA) Survey, 1.1% (193,000) of Australians were classified as having a gambling problem in a 12-month period (Armstrong & Carroll, 2017). Consistent with these findings, 1.0% of the NSW population were classified as having a gambling problem in the 2019 NSW Gambling Survey (Browne et al., 2019). Notably, these figures only account for those in the most severe problem gambling category, with one study indicating that 7-22% of those who do not meet problem gambling thresholds also experience gambling-related harm, albeit to a lesser extent (Shannon et al., 2017). Electronic Gaming Machines (EGMs) continue to represent the specific gambling form that is most associated with harm (Delfabbro, 2011), despite participation rates significantly decreasing in recent years (Browne et al., 2019). Consequently, harm minimisation programs (many centering on EGMs) are provided by industry and governments to protect vulnerable segments of the community from gambling harm (Productivity Commission, 2010).

Self-exclusion is one of the foremost gambling harm minimisation strategies. It is legislated Australia-wide and involves a formal process enabling individuals with gambling problems to ban themselves from either an entire gambling venue or gambling areas (to allow continued access to non-gambling facilities) of one or more venues (Gainsbury, 2014; Kotter et al., 2018; Ladouceur et al., 2017). It is the excluded person's responsibility to refrain from breaching the agreement by not attempting to gamble at excluded venues. However, venues must take reasonable action to prevent or remove individuals in breach of self-exclusion. Multiple evaluative studies using mixed methodologies have demonstrated that self-exclusion programs are effective in reducing problem gambling behaviour, urges to gamble and associated financial hardship, in addition to improving mental health and quality of life (see reviews by Gainsbury, 2014; Kotter et al., 2018; Nelson et al., 2018; Pickering et al., 2018; Hayer & Meyer, 2011). However, the impact of self-exclusion programs is considerably weakened by factors relating to its structural features as well as characteristics of target end users, which has resulted in poor uptake (Productivity Commission [2010] estimated an uptake rate of 10-20% in Australians with a gambling problem; however, we expect that the true rates are more consistent with other gambling help service uptake [i.e., <10%; Delfabbro, 2011]).

Structural barriers to self-excluding include the time-consuming enrollment procedures, the substantial effort required particularly in applying to multiple venues, and overall lack of privacy and confidentiality (Hing & Nuske, 2012; Hing, Tolchard et al., 2014; Pickering et al., 2018, 2019). Many jurisdictions still rely on traditional paper and photo-based self-exclusion systems, where individuals are expected to attend separate face-to-face meetings at gaming venue sites for every venue from which they wish to self-exclude (Thomas et al., 2016). In self-report studies, self-exclusion users have criticised the insufficient information about the program, inadequate support from program representatives, and lack of options relating to specific components (i.e., selection of self-exclusion length) (Ladouceur et al., 2000; Hing, Tolchard et al., 2014; Nelson et al., 2010; Pickering et al., 2018, 2019). These structural inadequacies interact with the vulnerabilities of individuals wanting to self-exclude to either delay or prevent them altogether from joining the program.

Shame and embarrassment due to stigma associated with one's gambling problem has been identified as a significant barrier to help-seeking, including self-exclusion (Abbott et al., 2011; Hing, Tolchard et al., 2014; Nowatzki & Williams, 2002; Parke et al., 2015; Pickering et al., 2018). Such emotions may be heightened for individuals living in remote or regional areas

where community members are often well-known to each other. For programs requiring in-venue self-exclusion enrollment, exposure to the gambling environment can generate strong urges in problem gambling individuals and lead to further gambling episodes (Potenza et al., 2003; Smith et al., 2013). Lastly, a considerable segment of individuals prefers remote self-help options to manage their gambling problems as opposed to engaging with formal face-to-face service modes (Suurvali et al., 2009).

Our recent qualitative study based on a NSW sample indicated that self-exclusion users would prefer the option of an online registration process. Consistent with the extant literature, participants highlighted the potential of an online system to increase accessibility and privacy, streamline processes, avoid embarrassment, and encourage personal ownership of help-seeking behaviours (Pickering et al., 2019). An online approach is arguably the logical next step for self-exclusion programs given the transition of many previously face-to-face tasks to online platforms. Internet-based management of services such as banking, mortgage loan applications, taxes, Medicare, license and registration renewal, and shopping, are increasingly being incorporated into modern life (Australian Bureau of Statistics, 2018). Health and mental health services are no exception as there is a rapidly growing demand for online interventions to treat and manage a myriad of conditions (e.g., Enam et al., 2018; Musiat & Tarrier, 2014). Previous research has shown that internet-based self-management interventions delivered in at-risk and clinical populations is a promising avenue in driving positive behaviour changes, improving psychosocial functioning and quality of life (Hoffman et al., 2016; Schaub et al., 2016; Suojanen et al., 2020). Accordingly, the national spotlight has been placed on the development of effective eHealth technology with its inclusion in the Government Sciences and Research Priorities (2015).

Some national and international self-exclusion providers have responded by introducing structural improvements with new and emerging technology as the primary source of innovation (Håkansson & Henzel, 2020; Hayer & Meyer, 2011; Ipsos MORI Public Affairs, 2020; Lischer & Schwarz, 2018; Pickering et al., 2018). Self-exclusion providers can offer additional benefit to users by leveraging information technology advances to increase system flexibility and access (Koivumäki et al., 2017), in addition to potentially reducing costs and training associated with maintaining and implementing these programs Australia wide. For example, the United Kingdom has recently introduced GamStop which offers a web-based self-exclusion register for individuals to activate a blanket ban from all nationally licensed online gambling companies (GamStop, nd). Although this system provides a useful resource for online wagerers, it does not cover land-based gambling forms. A similar online self-exclusion system is to be developed in Australia through the National Consumer Protection Framework, which will cover all nationally licensed wagering sites (Department of Social Services, 2017). In terms of Australian land-based programs, the ClubSafe Multi-Venue Self-Exclusion (MVSE) program is provided by the peak club industry representative body, and it enables people to simultaneously exclude from multiple gaming venues with their information retained on a digital centralised database (ClubsNSW, nd). Individuals have the option to self-exclude outside the venue premises with a gambling help counsellor, although still requiring them to attend a face-to-face meeting. BetSafe (nd) is a privately operated system in NSW and ACT, which allows individuals to complete self-exclusion requests via an online form. However, applicants are subsequently required to complete and return additional paper-based documents via registered post, rendering the online form redundant. Additionally, the BetSafe website hosts a rudimentarily designed user-interface, which could potentially cause issues with usability and acceptance among the target population.

In 2019, The Swedish Gambling Authority introduced Spelpaus (English translation: 'game break'), which is a centralised online self-exclusion system covering all nationally licensed gambling companies (online and land-based; Spelinspektionen nd). Spelpaus has shown good uptake since its inception with more than 50,000 sign-ups (Spelinspektionen, nd), however media reports have highlighted initial structural issues as self-excluded individuals were still able to access certain gambling sites and continued to receive gambling-related marketing materials (Stradbroke, 2019; O'Boyle, 2020). Despite these initial teething problems in the Spelpaus system, the high sign-up rate demonstrates the impact that an easy-to-use online

registration portal can have on self-exclusion utilisation. A system encompassing both online and offline gambling products may be particularly efficacious with research showing that individuals engaged in both modes are at the greatest risks of harm (Gainsbury, 2015). For this reason, eventual integration of self-exclusion system developed separately for online and land-based gambling modes in Australia is important to consider.

Research Approach

The current project adopts a co-design research framework in an iterative process of developing and evaluating a website for self-directed online registration into land-based self-exclusion. Co-design methods are frequently used in the eHealth literature because they are particularly useful to ensure that health service offerings align with the expressed needs of end users and key stakeholder (Crosby et al., 2017; Dawda & Knight, 2017; Donetto et al., 2015; Eyles et al., 2016). Co-design of health services has been shown to lead to more efficient decision-making, lower development costs, and reduced development time, in addition to being associated with better cooperation and greater investment of key stakeholders during implementation (Steen et al., 2011). Most importantly, co-designed services support increased uptake and enhanced effectiveness of health-related interventions (Boyd et al., 2012).

Phase 1 Study: Requirements Analysis

Comprehensive analysis of specific functional and technological requirements underlies good eHealth design (van Velsen et al., 2013). This formative research stage provides a detailed account of what the website should do, how self-exclusion data should be stored and retrieved, the nature of content that should be incorporated, and the type of user experience that the website should accommodate (van Gemert-Pijnen et al., 2011; Saiedian & Dale, 2000). Involving end users and other relevant stakeholders in identifying and evaluating requirements is a key strength of the co-design approach. Focus groups and interviews with these groups are well-suited during this formative research stage. Compared to quantitative methods, qualitative research involving diverse stakeholders facilitates the exploration of a wider, richer range of ideas and perspectives. They provide an in-depth contextualised understanding of the service gap which could be supported by technology, the nature and scope of expected design functionality, in addition to input on appropriate implementation strategies and business models (van Gemert-Pijnen et al., 2018; van Velsen et al., 2013).

Key requirements identified based on the requirements analysis directly informed the development of the alpha version website. 'Alpha' in this project was defined as the first functioning version of the website, it is likely to contain bugs or errors resulting in user experience problems, and it does not include all features planned or unplanned for a 'release candidate' version.

Phase 2 Study: Usability Testing

Usability testing was conducted on the alpha website with a targeted sample of self-exclusion end users. The International Organization for Standardization (ISO; 1998) defines usability as: "the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use" (9241–11). It is an important factor in the development of digital health applications as it plays a vital role in the level of uptake and continued engagement with such systems by ensuring they are appropriately designed to meet end users' needs and expectations (Zapata et al., 2015). The usability of digital health applications directly contributes to their efficacy in promoting intended health behaviours and outcomes given the close relationship to acceptance among target end users (De Vito Dabbs et al., 2010). Conducting usability testing early in the website development process identifies system issues before the system is scaled up and released to the public, thus saving a considerable amount of time and money in development long term (Ardito et al., 2011; Brown et al., 2013).

Findings from the usability study were used to guide development of the beta website version. Particular attention was given to fix user-identified system errors, refine existing features, and add new features if these were given adequate support by end users. 'Beta' in this project was defined as the feature complete second iteration of the website development. This version may be used for previews or demonstrations, although it may still have (un)identified bugs that can affect performance.

Phase 3 Study: Acceptability Evaluation

Psychological factors (e.g., openness to new technology), information technology factors (e.g., service quality) and socio-demographic factors (e.g., income, geographical location) can explain up to 40% of why users adopt or 'accept' certain eHealth technologies (Peek et al., 2014; Zhang et al., 2017). Acceptability refers to a target population's intention to use a system, which is expected to lead to the actual use of the technology when it is made publicly available (Venkatesh et al., 2003). Acceptability is typically operationalised as a broad construct incorporating usability as well as other relevant factor that may predict future use (Ginsburg et al., 2016). One of the most well-supported and established models is the Technology Acceptance Model (TAM; Davis, 1989) illustrated in Figure 1 below, which highlights how end users' perceptions of usefulness and ease of use translates to actual use of an eHealth tool.

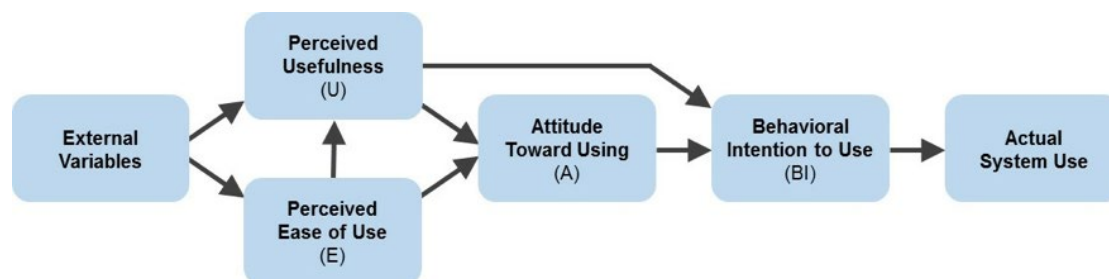


Figure 1. A diagram explaining the role of perceived usefulness and ease on intention to use a system and actual use. [Sourced from Peek et al., 2014]

According to the TAM, perceived usefulness and perceived ease of use are key indicators as to whether a user will 'accept' a technology. Usefulness is defined as the extent to which an end user feels that using a system would enhance their performance of a given task, whilst ease of use (i.e., usability) refers to how effortless the end user feels the system will be. Ideally, a system should be both useful and easy to use to justify its adoption. An evaluation of acceptability with end users can determine end users' intentions to use a web-based self-exclusion system and highlight final areas of improvement (Zhang et al., 2017).

Phase 1: Requirements Analysis

Study Aims

The aim of this study was to explore specific end user requirements for an online self-exclusion website to support self-directed registration, in addition to identifying contextual factors that might affect the development and implementation process.

Stakeholder focus groups and interviews were conducted with end users, gambling counsellors, gaming venue staff, and gambling policy makers to:

- 1) Elicit these stakeholders' perspectives on key features relevant to the design and functioning of an optimal self-exclusion website.
- 2) Identify practical issues that could potentially impact the development and implementation of a self-exclusion website.

Findings from this study will directly inform the initial development of the website's core features as shown in Figure 2. The study will, however, continue to serve as an important reference during the latter phases of the project and in future related projects.

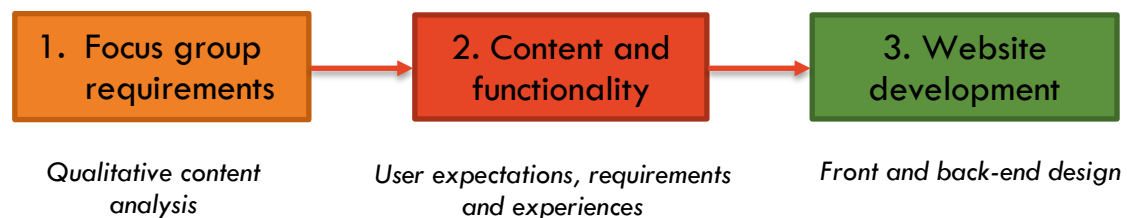


Figure 2. Flowchart of the research and development process – phase 1

Methodology

Ethical Approval and Pre-registration

The study protocols were approved by The University of Sydney, Human Research Ethics Committee (HREC) 24th of March 2020 (Project #2020/111). The study methodology was preregistered on the Open Science Framework based on a qualitative preregistration template created by Hartman et al. (2019).

Participants

The sample consisted of 25 participants (5 self-exclusion end users, 7 gambling counsellors, 6 venue staff, and 7 policy makers). The sample size is consistent with recommendations for using content analysis in an eHealth context, which indicate 5–10 participants per subgroup (20–40 cumulative) as sufficient to achieve data saturation (Boddy, 2016). Eligible participants were individuals with lived experience (current or past) using land-based self-exclusion (i.e., 'end users' or 'self-exclusion consumers'), or who were currently employed in professions directly relevant to self-exclusion programs. These professions were identified in the domains of mental health services (gambling help counselling), industry (gaming venue staff), and government (gambling-relevant policy).

Participants on average were 37.7 years old, female (52%) and well-educated (64% held a University degree). They spent an average of 6.1 hours per day using the internet, 96%

accessed the internet 7 days a week, primarily for work/study (76%). Participants general willingness to trial new technologies is shown in Figure 3.

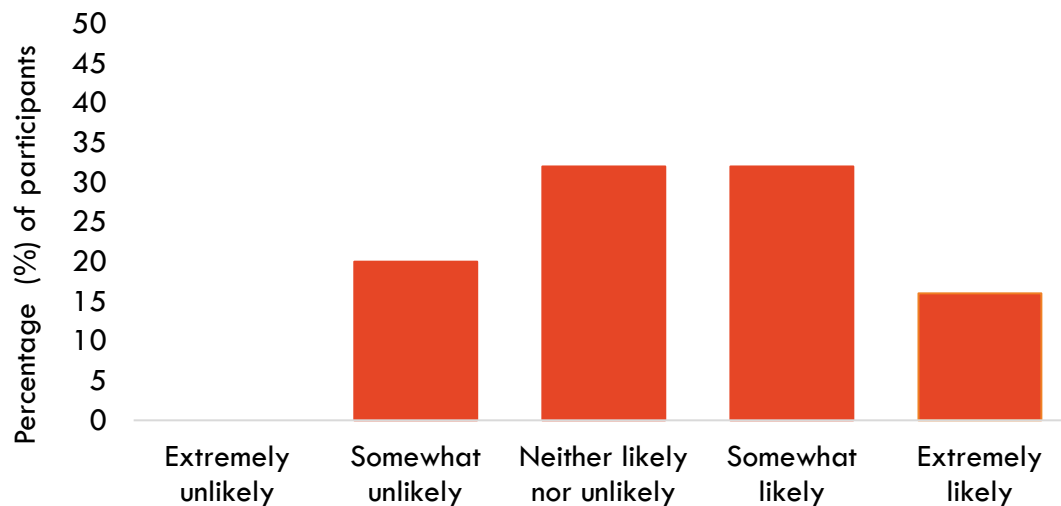


Figure 3. Participants openness to trial new technology (N = 25).

End user participants had been dealing with gambling problems for 9.4 years on average, and most (80%) nominated EGMs as the gambling form that had contributed most to their problem. Four out of five end users had seen a gambling counsellor in addition to self-excluding.

Industry professionals included four gaming floor staff and two venue managers; mental health professionals included three psychologists and one counsellor; government professionals included four NSW and three South Australian representatives. Professionals had been working in their field for 9.2 years on average (range = 9 months to 27 years).

Procedure

Eligible participants were individually contacted via email (April – May 2020) inviting expressions of interest in contributing to focus groups which explored individuals' unique perspectives on the design of a self-exclusion website for NSW gaming machine venues. Those replying to the email were subsequently sent more details about the study, they then signed and returned a PDF or Qualtrics-hosted digital consent form, with convenient meeting times arranged once a sufficient number of participants (at least 5 per stakeholder group; Boddy, 2016) were obtained. Focus groups were originally intended to be conducted face-to-face, however due to COVID-19 and university restrictions on face-to-face research, these were hosted online using Zoom video conferencing software. Additionally, two focus groups reverted to one-on-one interviews where participants failed to attend. Five other one-on-one interviews were purposely scheduled to accommodate the participants' schedule.

The focus groups/interviews began with an introduction of the research topic and purpose, participants were asked to briefly talk about their experiences of self-exclusion, and then to respond to and discuss a series of semi-structured open-ended questions. The focus groups/interviews took approximately 60 minutes to complete and were audio-recorded for transcription and analysis. Self-exclusion end users received a \$50 retail gift voucher as compensation for their time, whilst all other participants considered involvement with the study to be part of their professional duty.

Measures

Participants were asked to complete a screening survey including typical demographics questions (i.e., age, gender, education, employment status) and questions about general internet use (i.e., days-per-week using the internet, hours-per-day using the internet, main reason for using the internet). Participants additionally responded to a five-point Likert item on their willingness to 'try out' new technology. Professional groups specifically were asked questions relating to occupational history (i.e., place of employment, job title, years and month working in the field). Self-exclusion consumers only were asked questions relating to their gambling history (i.e., duration of gambling problems in years, gambling form that contributed most to problems, prior help-seeking for gambling problems).

Given the semi-structured design of the study, the following questions were used as prompts to guide focus group/interview discussions around ideal and potentially problematic website design elements, rather than being asked word-for-word. Additionally, occasional probing questions beyond those stipulated below, were used to clarify participants' intentions around ambiguous phrasing or abrupt statements (i.e., 'What do you mean by [insert phrase here]?').

1. In your opinions, what will people look for when deciding to use a website to self-exclude? That is, what might their ideal expectations of this website be?
2. What might deter people from using a website to self-exclude?
3. In addition to facilitating self-exclusion requests, what other features or functionality do you think the website should incorporate to provide users with assistance for their gambling problem?
4. Can you think of any practical issues or possible challenges that could arise during the development or implementation of this self-exclusion website?

Analysis

Descriptive statistics (i.e., mean, standard deviation, frequency) of the demographics and screening questionnaire responses across variables were performed in SPSS version 24 (IBM Corp., 2016). Each focus group or interview took 55 minutes on average to complete, with audio files transcribed verbatim to text files using Otter's intelligent voice-to-text software (Liang & Fu, nd). The resultant transcripts were manually reviewed, anonymised, and revised by the research team as necessary.

A structured eight-step content analysis process developed by Schreier (2014) was performed on the full qualitative dataset. These eight steps were:

1. Define the research question – guided by research objectives 1 and 2 (see above).
2. Select relevant material – material unrelated to the research objectives was deleted.
3. Build coding frame – a combined framework of 'concept-driven' categories (see Van Velsen et al., 2013) and 'data-driven' subcategories.
4. Segmentation – discrete thematic units.
5. Trial coding – coding frame applied to a representative portion of the dataset.
6. Evaluate/modify coding frame – based on the results of step 5.
7. Main analysis – apply the coding frame to the full dataset and calculate interrater reliability
8. Present and interpret findings – coding frequency per subcategory.

The authors regularly met to ensure transparency and consistency throughout the entire coding process as per best practice protocols (Bengtsson, 2016). Final coding frequencies were then calculated and populated into overarching category and sub-categories. Content analysis was conducted using NVivo (Version 11.0.0; QSR International, 2015).

Major Findings

The content analysis produced a comprehensive final coding frame encompassing a hierarchical structure of three levels: four main categories, 13 second-level sub-categories and 10 third-level subcategories. Table 2 presents descriptive labels identifying each category, operational definitions for the lowest level of subcategory per main category (i.e., second or third level), and terms ('indicators') associated with these subcategories. Table 2 also includes numerical coding frequencies per subcategory reflecting the number of times the subcategory-relevant content was raised or discussed by study participants. Table 3 extends upon the results presented in Table 2 by outlining decision rules the researchers applied to code transcription segments into specific subcategories, in addition to presenting representative quotes from the transcripts.

The four main structural categories extracted outline the core stakeholder-defined requirements for an optimal self-exclusion website. These were as follows:

- (1) **Contextual factors:** variables expected to contribute to success or failure of the self-exclusion website implementation that are not part of its specific features and functioning. Stakeholder participants emphasised the importance of individual characteristics of end users (i.e., younger age group, diverse needs, emotionally vulnerable); relevant social, legal, and political conditions (e.g., the NSW gambling regulatory environment); and advertising mechanisms to promote availability and benefits of the website (i.e., focus on digital strategies).
- (2) **Website attributes:** general qualities that are incorporated throughout the web content, design, and aesthetics, with consideration of its core function and end user needs. Participants indicated that end users should find the website to be user-friendly, flexible, credible, trustworthy, supportive, and encouraging.
- (3) **Core self-exclusion function:** specific features of the website that are directly relevant to the online self-exclusion registration process.

Participants outlined the key chronological steps for online self-exclusion:

- a) Personal data collection
- b) Identity verification
- c) Self-exclusion parameter specification
- d) Review and edit information
- e) Digitally signed declaration
- f) Confirmation record
- g) Notification to venues and other nominated parties

Participants identified features that should support end users in navigating these core steps without direct face-to-face assistance (i.e., clear instructional content, live chat and hotline support, and optional counsellor follow-up). Moreover, robust data security measures were perceived as critical for the entire data life cycle given its highly sensitive nature.

- (4) **Additional website features:** specific features that add value to the overall website, though are not directly relevant to self-exclusion registration. Participants suggested incorporating information and links to additional help resources, a personal dashboard for end users to review and update current self-exclusions, and an access point for professional stakeholders to report breach events, collect de-identified data, and receive self-exclusion policy and regulation updates.

Coding frequencies indicated participants' perspectives regarding the subjective importance of a subcategory (i.e., higher frequency = high importance; low frequency = low importance). Based in this interpretation, the most important three subcategories identified in descending rank order were:

- (1) The credibility and trustworthiness of the website which relates to gambling-related social stigma and concerns that end users may have about the security of entering their private information into a digital system. Privacy and security concerns are a key barrier to the uptake of digital health systems (Ozair et al., 2015; Sahama et al., 2013).
- (2) The simplicity of the website structure and the ease in which end users can navigate through the various features and function to perform the core self-exclusion steps and successfully submit a completed self-exclusion application. This subcategory speaks to the usability of the website (see phase 2 study) which is crucial to gaining acceptance for a digital health service in the target population (De Vito Dabbs et al., 2010).
- (3) Environmental factors such as the social, political, and legal context in which the self-exclusion website would be implemented were identified as influential in the success or failure of implementation. There are multiple parties with competing and shared interests concerning a web-based self-exclusion system, which is supported by the diversity of stakeholder groups involved in the current study. Gaining the support or 'buy-in' of all invested groups will contribute to a successful implementation (Steen et al., 2011).

Table 2. Final coding frame: Categorical hierarchy, coding frequencies, definitions, and indicators

Structural category	Subcategory Level 1	Subcategory Level 2	Frequency	Definition	Indicators
1. Contextual Factors	1.1. Perceived end user characteristics	1.1.1. Younger demographic	26	End users were expected to be younger adults that use computers for numerous tasks	<ul style="list-style-type: none"> • Computer literacy, • Digital natives, • Tech savvy, • Young people, • Older generations
		1.1.2. Vulnerable psychological state	18	Individuals self-excluding were perceived to be experiencing negative emotional states that may impact registration completion.	<ul style="list-style-type: none"> • Distressed, • Ambivalent, • Impatient, • Embarrassed, • Ashamed
		1.1.3. Diverse requirements	19	End users are likely to originate from various backgrounds, have different life experiences and thus different expectations of the website functions. These could range from basic self-exclusion to integration with other help services and follow-up supports.	<ul style="list-style-type: none"> • Personal preference, • Readiness-to-change, • Everyone is different
	1.2. Socio-legal environment		82	Successful implementation of the website will be influenced by relevant social, political, and legal factors associated with social stigma, the gambling industry, harm minimisation regulation, and legal requirements for self-exclusion agreements.	<ul style="list-style-type: none"> • Compliance, • Regulations, • Buy-in, • Collaboration, Stigma
	1.3. Advertising and Promotion		27	A good marketing strategy was viewed as important to end user uptake of the website. Participants proposed various strategies to communicate its availability and benefits to people who gamble.	<ul style="list-style-type: none"> • Word-of-mouth, Endorsement, Influencers, • Digital marketing, Social media, In-venue promotion
2. Website attributes	2.1. User-friendly	2.1.1. Easy and simple	85	End users should be able to seamlessly navigate through the website, particularly the core self-exclusion process.	<ul style="list-style-type: none"> • Clear instructions, Logical, • Minimal information, • Straightforward, Seamless, • Layman, No legal jargon

		2.1.2. Flexible	43	The website must be capable of accommodating the diverse requirements and individual preferences of end users.	<ul style="list-style-type: none"> • Immediate, • Accessible, • Options, Customisable, Choice, • Cross-compatible, App version
		2.2. Credible and trustworthy	90	The website should convey to end users that the service is legitimate, safe, and secure for them to use	<ul style="list-style-type: none"> • Authentic, Not dodgy, Reputable, Government-style, Discreet, Professional, Official, University and Government logos • User feedback
		2.3. Encouraging	61	The website should validate end user decisions to address their problem gambling, motivation them to overcome change ambivalence and complete the self-exclusion registration in full.	<ul style="list-style-type: none"> • Warm colours, Positive imagery, Happy people, Motivational, • Animations, Personal stories and testimonials.
3. Core self-exclusion function	3.1. Key process elements	3.1.1. Personal data collection	23	End users must provide relevant personal information for online self-exclusion registration. The information is used by program operators and venue staff to identify end users in case of a breach.	<ul style="list-style-type: none"> • Name, Address, Email, Date-of-birth, Digital forms, Image capture and upload, Profile picture
		3.1.2. Identity verification	71	The website must be able to confirm that end users are the person they report to be. Identity verification was perceived to be more difficult online compared to in-person.	<ul style="list-style-type: none"> • Fraud, family member, 3rd party, verification software, driver's licence, 100-point check
		3.1.3. Self-exclusion parameter selection	70	End users should be able to define certain aspects of their self-exclusion agreement, by nominating venues, venues areas, and the self-exclusion time-period.	<ul style="list-style-type: none"> • Multiple venue, partial exclusion, venue areas, online gambling sites, exclusion period, timeframe
		3.1.4. Review and declaration	45	End users should be provided an opportunity to review and edit details they have entered up to this point. End users must subsequently be presented with the agreement terms and required to produce a signature.	<ul style="list-style-type: none"> • Edit, Revise, Check, Correct mistakes, Digital contract, Agreement form, Terms and conditions
		3.1.5. Confirmation and notification	38	The website should provide end users with confirmation that their self-exclusion has been submitted and accepted. Nominated venues and other relevant parties are to be notified.	<ul style="list-style-type: none"> • Certificate, email details, inform, nominated venue/staff only, court-ordered

	3.2. Process support elements	50	The website should include features that assist end users to navigate the key self-exclusion process elements.	<ul style="list-style-type: none"> Progress bar, counselling tick box, email, live chat, hotline, clear instructions, save and return later,
	3.3. Data security measures	33	The website must incorporate highly secure data protection measures given the sensitivity of the issue and importance of maintaining end user privacy.	<ul style="list-style-type: none"> Encrypted, retention period, privacy protection, account password, leakage, unauthorised access
4. Additional website features	4.1. Additional help resources	49	The website should include links to additional help resources that are relevant to problem gambling populations. The resources should be holistic and target the multiple areas of life affected by gambling.	<ul style="list-style-type: none"> Counsellor, psychologist, financial, Support group, online resources, government assistance
	4.2. User information dashboard	24	After self-excluding, end users should be able to re-access the website to review and update the details of their current self-exclusion agreement.	<ul style="list-style-type: none"> Update details, check status, self-report breaches, extend self-exclusion
	4.3. Non-self-exclusion user functions	20	The website would benefit from a platform only accessible to professional stakeholders (i.e., industry operators, counsellors, policymakers). The platform would support relevant data collection and provision of pertinent information for the purpose of improving self-exclusion efficacy.	<ul style="list-style-type: none"> Compliance reports, Policy & Regulation updates, Venue staff forum, Data insights

Table 3. Final coding frame: Coding instructions and representative quotations

Subcategory	Coding instructions and decision rules	Example segments
1.1.1. Younger demographic	Segments focusing on the age and associated computer skills of potential users. Segments must state indicators explicitly (i.e., not implied).	<i>You find a lot of young people that self-exclude and they come in here [casino]... They are students. They are here on a visa. And these are the people that you really want to capture. Especially students. Why? Because they are usually computer savvy, they wouldn't mind doing it if they [can] do it online. (Venue staff)</i>
1.1.2. Vulnerable psychological state	Segments focusing on end users' cognitive and emotional state leading up/during self-exclusion registration. Segments must focus on how these states relate to self-exclusion experiences	<i>You're handling a lot, and in the midst of that, any barriers just make it more difficult, you know? (Service user)</i>
1.1.3. Diverse requirements	Segments focusing on any differences between end user characteristics and associated expectations of how the website can assist with gambling problems. Excludes the management of psychological vulnerability with user-friendly features.	<i>A couple of things we'd like to do better is [to] have a good system for culturally and linguistically diverse people using our website. (Policy maker)</i>
1.2. Socio-legal environment	Segments broadly focusing on relevant environmental factors that will influence uptake and utility of a self-exclusion website across key stakeholder groups. Includes stakeholders' 'buy-in' to the service but excludes their promotional endorsement of it.	<i>Their only concern is compliance. That would be as a manager of a club and you came to me with your proposal. I could care less what it is just how do I how can you ensure that I don't get sued? I'm not signing up to it if I can't. (Counsellor)</i>
1.3. Advertising and Promotion	Segments focusing on increasing end users' awareness of the website availability if it were to become live. Promotional efforts must specifically target end users. Excludes garnering of support from professional stakeholders. Excludes references to promotion of traditional self-exclusion programs.	<i>Hopefully just having the digital platform makes it easier to promote as well. Because when [participant] said he'd never heard of self-exclusion before that to me is a bit of a worry... I reckon it's definitely one of those things that's sort of out of sight out of mind unless someone asked for it. Yeah, making sure that everybody knows this is an option and it's not a difficult option. I think it's super important. (Service user)</i>
2.1.1. Easy and simple	Segments focusing on clear and simple website functioning. Includes reverse statements, i.e., that it should not be overly complex or confusing. Refers to when people have accessed and are using the site. Excludes segments relevant to accessibility.	<i>Easy, easy-to-use. Step 1-2-3. For the layman, who doesn't understand, you know, a lot of people, even if it was an app or anything like that, a lot of people struggle to download apps. So, it's got to be extremely easy. (Venue staff)</i>

2.1.2. Flexible	Segments focusing on empowering end users to control how they access and use the website. Includes customisation of program parameters to meet the needs of individual end users.	<i>For me, I do a lot of stuff on my phone. And I know some websites don't work properly on your phone. I think you've got to design it so that you can use all the prompts from your phone... Yeah, I would say an app is better for me personally... I think that I would want to check out the website to see what's going on and what I'm actually downloading. But then fill in my form on the app... Because I find that easier. (Venue staff)</i>
2.2. Credible and trustworthy	Segments focusing on website attributes contributing to end user confidence in core function performance and integrity. Includes aesthetic website features, and reassurance of personal privacy. Excludes specific data security measures that are not explicitly promoted to end users.	<i>I think legitimacy... if it doesn't look official and schmick and professional, regardless of how the security and privacy is, people won't trust it. Part of it, I think, is about the quality of the design and the kind of the finishing there is in the graphic design rather than the functional design. That it looks neat. You know, there can't be mistakes. It can't look... 20 years old or like maybe someone did at home. (Policy maker)</i>
2.3. Encouraging	Segments focusing on website attributes that provide a positive and welcoming environment. Includes strategies to encourage end users' help-seeking behaviour and avoid mid-registration dropout. Includes aesthetic and multimedia website elements.	<i>I think some kind of positive reinforcement statements, you know, congratulating the person for taking the first step in going on to the website, and just encouragement. I think that can be important sometimes because it can be a bit scary going through the whole process. Especially initially when you're thinking of barring yourself from the venue. It can be a bit negative, [a] bit of a downer. So, having some positive reinforcement, I think would help. (Service user)</i>
3.1.1. Personal data collection	Segments focusing on required personal information fields for self-exclusion registration. Includes digital methods of personal data collection. Includes capturing a profile image for identification. Excludes the collection of identifying data for verification.	<i>I think it could be as simple as like when you fill out a shipping address... [your] first name, last name, obviously username, date of birth and a photo of yourself with your address. Or just requiring that information which is on your driver's licence. (Service user)</i>
3.1.2. Identity verification	Segments focusing on the importance of verifying end users' identity and how this can be achieved online. Includes motivations of others posing as end users, potential methods and consequences of circumventing verification processes.	<i>The biggest issue I see is if I think that my mother's got a problem, I might log in and exclude her from all the clubs she regularly goes to. It's usually the elderly who their children are ringing saying they're spending all our inheritance and really want them barred. So there has to be a way of them proving and signing off on their identity.... Probably a 100-point check style verification... I think if you make it loud and clear that if you are, you know, a third party and you're trying to say that you're the person is excluding the ramifications of that are quite serious. (Venue staff)</i>

3.1.3. SE parameter selection	Segments focusing on optional aspects of the self-exclusion agreement. Includes selection of venues, venues areas, and timeframe. Includes multiple venue self-exclusion. Includes gambling website self-exclusion. Excludes the option to be contacted by a counsellor.	<i>Just being able to click on a venue and self-exclude, and set timeframe to a year, five years, lifetime, whatever. And then just having it done on the spot, you know, [it's] done once you click confirm. (Service user)</i>
3.1.4. Review and declaration	Segments focusing on the benefits of displaying a self-exclusion summary sheet to end users, thus allowing them to edit sections where mistakes are identified. Segments additionally focus on the need to inform end users of self-exclusion terms and conditions and requiring their consent.	<i>I think maybe someone just misspelling their name. So being able to just ensure that yeah, they can reconfirm all the details. Someone could be doing this in a rush... so to be able to reconfirm their details. So again, they can stick in their details if there are any issues. (Service user)</i>
3.1.5. Confirmation and notification	Segments focusing on communicating the status of a completed self-exclusion agreement to nominated venues and the end user. Includes notifying other interested parties upon end user's request. Includes details of when the self-exclusion takes effect. Includes positive reinforcement of end user's actions.	<i>I'd expect some kind of confirmation of what I've done, you know, something that I can take away or have after the fact for whatever purpose to show that I have done this self-exclusion... maybe down the track, I want to be able to show my counsellor or family, "yeah don't worry, I've done it"... And... Having a record of actually what rights [I] signed away, you know, under what conditions. (Policy maker)</i>
3.2. Process support elements	Segments focusing on website features that contribute to but are not classified as key process elements. Includes written and visual content, and interactive elements. Includes the option to be contacted by a counsellor.	<i>So maybe the first page of your website is sort of like the informational stuff. And then, as you go into describing or writing down your details, if you're not sure about the process... If you needed help, the support was there... phone or email or you know, these days, you can have like a little chat down the bottom, that would be handy. (Venue staff)</i>
3.3. Data security measures	Segments focusing on the protection of end users' personal information entered during the self-exclusion registration. Specifically, data management practices and technology that can fulfil this function. Includes supplying end users with information about the type of security measures employed. Excludes non-specific visual cues or icons that are suggestive of a secure website (e.g., a lock icon)	<i>A couple of my clients. We've discussed the whole self-exclusion programme thing and they've been very wary about confidentiality. Who can access their information once it goes to the venues? These often are people who have worked in hospitality. So they have concerns about where that information stored who can access it, how's it going to influence, you know. (Counsellor)</i>

4.1. Additional help resources	Segments focusing on providing end users with relevant information and contacts for additional gambling help resources. Includes both static content and consent be contacted by a counsellor. Excludes receiving help to navigate self-exclusion registration. Includes psychoeducation about problem gambling.	<i>Yeah, I think definitely having links to other problem gambling websites, treatment facilities or counselling services... Or even just little articles or blogs or podcasts, you know, just stuff around gambling and treatment and education. I think that would be handy</i> (Service user)
4.2. User information dashboard	Segments focusing on website features that enable end users to manage their personal information and active self-exclusion agreement. Includes self-reporting of breaches. Excludes breaches reported by other professional stakeholders.	<i>For me, I think having some sort of portal where I can log-in and see where I am self-excluded from and... when they run out and all that kind of stuff.</i> (Service user)
4.3. Non-self-exclusion user functions	Segments focusing on website features and functions that are relevant to professional 'non-self-exclusion' stakeholders. Includes breach reports submitted by professional stakeholders. Excludes content that end users (self-excluders) can access via the website.	<i>I think access to data would be really important. Trying to understand uptake, those sorts of things. How it links into a venue... so breaches can be reported... And I think having access to that information, not as a compliance tool, but as an information tool to see what's going on, where there might be issues... a venue might need some extra training in dealing with people that [are] breaching. I think that'd give us a really good idea if we've got particular hotspots in the state that we need to be mindful of.</i> (Policy maker)

Participants' perspectives were reasonably consistent between stakeholder subgroups which was somewhat unexpected given the heterogeneity of experiences they had with self-exclusion programs. These consistencies were particularly evident in participants' understanding of end users' characteristics, the importance of user-friendliness, the nature and sequence of core self-exclusion processes, and the advantages of additional help service information. Some different perspectives, however, were observed between groups when analysing the frequency of codes allocated to each main category as a function of participant group (see Figure 4); and when analysing each participant group's highest coded sub-categories within the four main categories (see Figure 5).

Figure 4 depicts that all stakeholders perceived website attributes as being of high importance and additional website features as being of lower importance. Self-exclusion consumers and venue staff perceived contextual factors as being moderately important, whereas counsellors and policy makers viewed contextual factors as highly important. We would have expected coding frequencies to indicate that venue representatives placed higher importance on contextual factors, and counsellors to place less importance on such factors. Importantly, these findings may be inflated or deflated by individual participants given the small sample size of subgroups. Lastly, coding frequencies indicated that compared to counsellors and policy makers, self-exclusion consumers and venue staff did not perceive core self-exclusion processes as important. It is quite possible that these core steps were overlooked by the latter two groups given their seemingly obvious role in the self-exclusion process or because participants believed these aspects had already been devised to reflect face-to-face procedures.

Figure 5 also presents some unexpected findings. The highest coded subcategories under contextual factors were diverse requirements (consumers and policy makers) and socio-legal environment (counsellors and venue staff). It could be argued that policy makers were expected to focus more on the socio-legal (and regulatory) environment, whereas counsellors might be expected to place greater emphasis on the unique requirements of individual clients. Again, the small size of these groups substantially limits the applicability of findings to the broader populations they are intended to represent. With respect to additional website features, it is not surprising that self-exclusion consumers endorsed an end user profile dashboard with this feature being particularly useful and relevant to their needs. In contrast, only professional group participants suggested non-self-exclusion user functions (i.e., an incident report for self-exclusion breaches, up-to-date information on gambling harm minimisation regulation, a discussion forum for NSW venue managers and staff, system data analytics).

Several relationships were observed where individual data segments were simultaneously coded across two or more main categories (as permitted in content analysis according to Schreier, 2014). Table 4 presents the most frequently cross-coded subcategories. To illustrate, data segments coded to the socio-legal subcategory were also coded to credible and trustworthy and verification of identity. Segments coded to credible and trustworthy were additionally linked to data security. Taken together, these associations reflect the legal environment in which the system will be operating and need for robust and secure measures that will instill confidence in end users and other stakeholders. To provide another key example, diverse end user requirements tended to associate with flexibility and registration process supports. This likely reflects the importance of integrating more adaptable registration procedures and extra support features for end users with special needs (e.g., culturally and linguistically diverse, individuals with cognitive impairment or limited reading abilities).

Stakeholder groups	Consumers	Venue staff	Counsellors	Policy-makers
Categories				
Contextual factors	Moderate		High	High
Website attributes	High			
Core self-exclusion process(es)	Low			
Additional website features	Low			

Figure 4. Overall perceived importance of Self-exclusion website functions, attributes and contextual elements across stakeholder groups

Note. This figure depicts the perceived importance of each category via the number of items coded. To account for differences in interview lengths, total codes were weighted to correct for differences in focus group times. Codes were then separated into quartiles per number of coded attributes, indicative of high ($X > 93$), moderate ($92 > X > 64$) to low ($X < 63$) importance.

Stakeholder groups	Consumers	Counsellors	Venue staff	Policy-makers
Categories				
Contextual factors	Diverse requirements (1.1.3)	Socio-legal environment (1.1.2)		Diverse requirements (1.1.3)
Website attributes	Easy and simple (2.1.1.)		Flexible (2.1.2)	
Core self-exclusion process(es)	Process supports (3.2)			Self-exclusion parameters (3.1.3)
Additional website features	User information dashboard (4.2)	Non Self-exclusion user functions (4.3)	Additional help (4.1)	

Figure 5. Most coded sub-categories per stakeholder group indicating similarities and differences across perceived importance of Self-exclusion website functions, attributes and contextual elements

Table 4. Nature, frequency and proportion of cross-coding between coding scheme subcategories across all stakeholder groups

Rank	Most common cross-coding relationships per sub-category	Proportion of cross-coded data accounted for by each subcategory (%)
1	1.2 Sociolegal → 2.2 Credible and trustworthy → 3.1.2 Identity verification	22.3
2	1.1.3 Diverse requirements → 2.1.2 Flexible → 3.2 Process support	18.9
3	1.1.2 Vulnerable psychological state → 2.3 Encouraging → 3.2 Process support	16.7
4	2.1.1 Easy and simple → 3.1.1 Personal data collection	11.7
5	2.2 Credible and trustworthy → 3.3 Data security	6.8
6	2.1.2 Flexibility → 3.2 Process support → 4.2 User information dashboard	6.4
7	1.3 Advertising and promotion → 2.2 Credible and trustworthy → 3.3 Data security	4.2
8	1.1 Younger demographic → 2.1.2 Flexibility → 3.1.3 Parameter selection	3.8

Note: Researchers isolated individual data segments assigned to multiple (2 or more) categories and exported these into an excel spreadsheet. Most frequently co-assigned patterns of sub-categories between main categories were ranked from highest to lowest. All remaining cross-coded relationships represented less than 3.8% of the total cross-coded data and were not included in ranking.

Summary and Conclusion

Focus groups and interviews were conducted with 25 participants across four key stakeholder groups: self-exclusion consumers, gambling counsellors, venue staff, and policy makers. Content analysis of the qualitative data revealed a combination of features and functions that would constitute the ideal self-exclusion website. Practical constraints, however, preclude inclusion of all suggestions. It is therefore important to consider priority and feasibility in deciding what features must be incorporated into the alpha website development. The findings indicated that the website must be simple to use, accommodate individual needs and expectations, demonstrate credibility and trustworthiness, and encourage end users by reinforcing their decision to enact positive behavioural change. These attributes were deemed especially important given the diverse profile and vulnerable emotional states of target end users. Most of the attributes extend beyond just the structural elements of the website to also incorporate website content, design, layout, and aesthetics. According to participants, the website should be able to support the entire self-exclusion procedure, including the collection of personal data (including a photograph), identity verification, self-exclusion venue and timeframe selection, and a digitally signed declaration. Data security and privacy protection were identified as being primary overarching concerns. Participants suggested incorporating information and links to other relevant help services into the website in addition to its core self-exclusion functions. This is consistent with existing evidence indicating the benefits of a combined intervention approach (Błaszczynski et al., 2007). Although outside the scope of the current project, an end user dashboard and various professional stakeholder functions may guide future website additions. The identified contextual factors provided valuable insight into processes that would likely contribute to the success of this web-based system at the stage of implementation. Specifically, the support of key stakeholder groups, legal assurances relating to data protection, and effective marketing and communications. Overall, these findings provided a comprehensive and useful information database to guide the development of the alpha website version, as well as future system upgrades and implementation strategies. The present findings are also relevant to the development of eHealth programs more broadly.

Alpha Website Development

The initial phase of the website development commenced by recruiting The University of Sydney, School of Psychology Technical Support Team for back- and front-end programming needs.

- Thuyen Vu (Senior Technical Lead)
- David Yu (Research Technical Officer)
- Nenad Petrovski (Computer Systems Officer)

Preliminary discussions with the technical team clarified that website design and technical features are to be built based on requirements provided by the research team, which ultimately were to be derived from findings of each planned study. The technical and research team agreed to work collaboratively to negotiate all practical issues. A website flowchart (Figure 3) was developed and forwarded to the technical team for consideration and feedback.

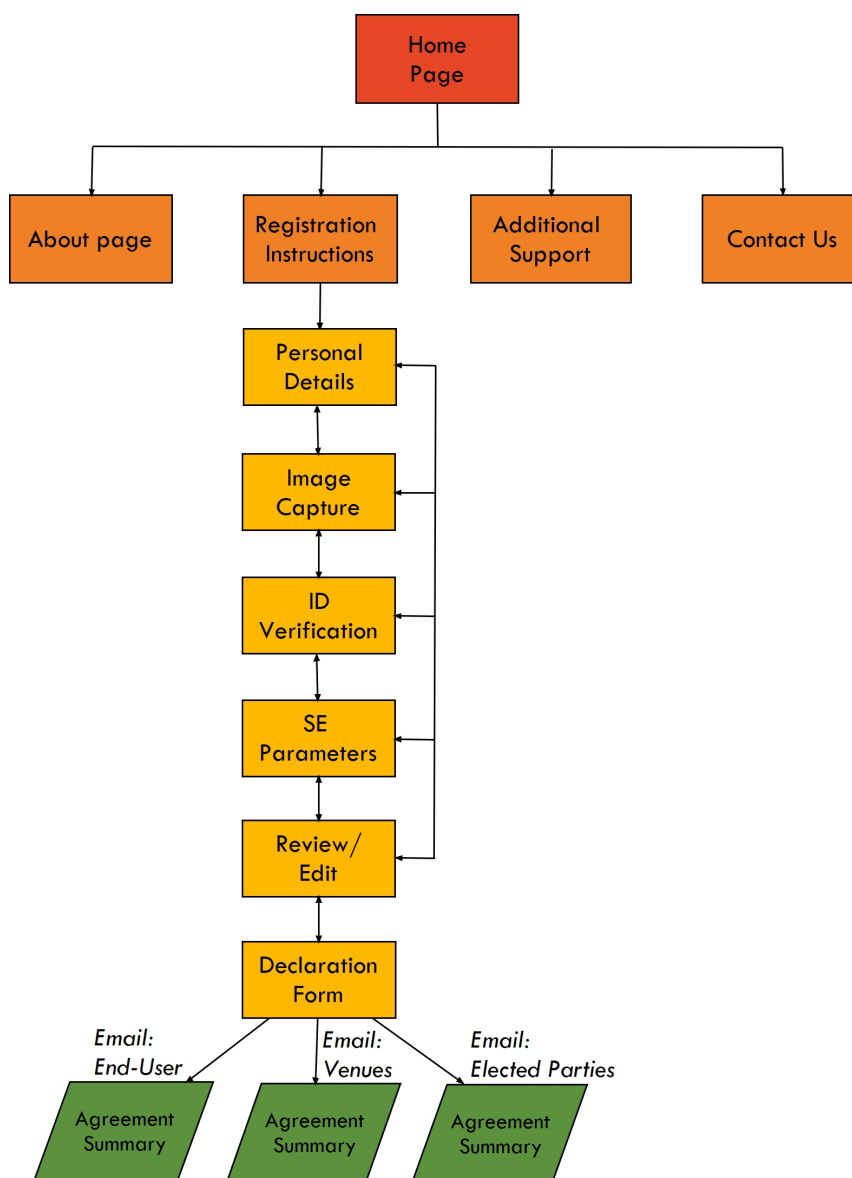


Figure 6. Draft Self-Exclusion Website Flowchart. Note. Changes were made to the website structure as the project progressed.

The technical team identified ID verification as a particularly challenging aspect of developing a functional self-exclusion website. They emphasised the requirement to outsource this aspect of the website build to a specialist ID verification company with experience in secure data storage systems, as the website progressed toward implementation. A brief search revealed several online ID verification products with varying levels of stringency, from verifying details of a single identifying documents to sophisticated biometric facial recognition and 'liveness' detection. Some example products include:

- [Australia Post's Digital iD™](#)
- [Bio ID](#)
- [Jumio](#)
- [Refinitiv](#)
- [MaxID](#)
- [VixVerify](#)

Informal brainstorm sessions were held to formulate an appropriate name for the website. 'MySelfExclusion' was selected as it conveyed personal ownership and empowerment associated with the self-directed nature of this web-based self-exclusion process. The name was subjected to an internal feedback process within the Gambling Treatment & Research Clinic. It was well-received among 22 gambling counsellors, researchers, and students, with an average rating of 8 out of 10 (higher scores = greater likeability).

Preliminary content for the individual webpages was constructed and transferred to the web development platform (see below). Initial content was based on information obtained from a background literature review and environmental scan. Language used in the declaration form was derived from requirements stipulated in the Gaming Machines Act (2001), Gaming Machines Regulation (2002), and the [Standard Self-Exclusion Agreement](#) provided by NSW Liquor and Gaming. Legal review of the precise wording will be required prior to implementation as edits were made to enable translation onto a web platform.

The University technical team and lead author developed and refined the alpha website based on the integration of existing self-exclusion program knowledge and findings from the requirements analysis. Importantly, discussions with the technical team concerning priority and feasibility guided decisions relating to the inclusion versus exclusion of features identified in the requirements analysis. The alpha site was developed using [WordPress Fusion Builder](#) and using the Template [Avada Law. Gravity Forms](#) – a WordPress plugin – was used to construct the online self-exclusion registration form. Customised coding was required to build certain aspects of the website. For example, the photo capture page needed to be developed separately and integrated via the backend to ensure it could access end users' webcams across multiple browsers. A Secure Sockets Layer (SSL) protocol was installed to establish encrypted links between the MySelfExclusion server and end users for transferring private information. An upgraded web hosting service was purchased due to a high amount of central processing unit (CPU) power needed to support the multiple website functions and to enhance page loading times.

The alpha self-exclusion website was prepared for usability testing at the conclusion of the development activities described above.

Phase 2: Usability Testing

Study Aims

The purpose of this study was to evaluate the extent to which self-exclusion consumers can use the self-exclusion website to perform a completed self-exclusion registration with effectiveness, efficiency, and satisfaction. Specifically, usability testing in a semi-controlled test environment was undertaken with target end users to:

- 1) Determine if end users can successfully complete the self-exclusion task via the alpha website;
- 2) Identify usability issues affecting end user performance and satisfaction;
- 3) Directly elicit end users' suggestions for website improvements;
- 4) Identify technical solutions and updates to improve user experience and task performance

Findings from this study directly informed development of the beta website version incorporating user-guided updates and refinements.

Methodology

Ethical Approval and Pre-registration

The amended study protocols were approved by The University of Sydney, Human Research Ethics Committee (HREC) 26th of August 2020 (Project #2020/111). The study methodology was preregistered on the Open Science Framework on 28th of August 2020.

Participants

Ten self-exclusion end users participated in the study. Eligible participants were at least 18 years old with a history of involvement in land-based self-exclusion programs for gambling-related problems. Participants were recruited from the ClubsNSW self-exclusion database. The sample size is adequate for prototype and pilot usability studies (Tullis & Albert, 2013; Nielsen & Landauer, 1993). As shown in Figure 7, the detection rate of usability problems diminishes considerably as the number of test users exceeds 5. Ten users equate to a 97.6% detection probability.

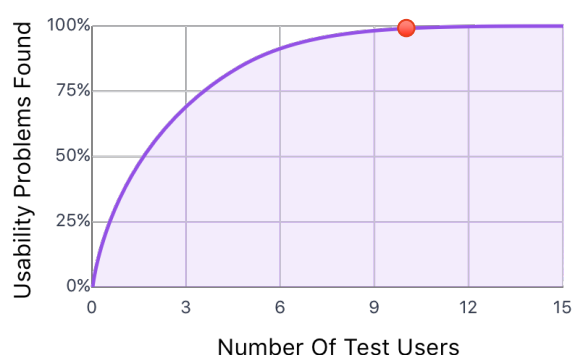


Figure 7. Relationship between the number of test users and number of problems detected in usability testing (Nielsen & Landauer, 1993)

Recruitment involved emailing study invitations to randomly selected blocks of 100 eligible participants. Four recruitment blocks were required to achieve the planned sample size with a 2.5% response rate. The implications of this very low response rate are addressed in the results and discussion sections. Responsive participants were phoned or emailed additional study information and a

suitable date and time was arranged for testing. Non-responsive participants were emailed up to two reminders at 3-4 business days apart.

The final sample consisted mostly of men (80%) who were on average 36 years old; they were reasonably educated (60% year 12 or above), and most spoke English as a first language (90%). Participants had experienced gambling problems for a mean of 12 years and mostly due to EGMs (80%). In addition to self-excluding, 70 % of participants had seen a psychologists/counsellor, and 30% had contacted a telephone helpline to assist with their gambling problem. All participants used the internet 7 days a week and for 5 hours per day on average. Most used the internet for instant messaging (70%), in addition to social networking (60%) and work/study (50%). They accessed the internet through their smartphones (90%), laptops (50%) and desktops/tablets (20%). Most participants indicated a good (50%) or excellent (30%) level of computer competence, and 60% reported feeling extremely confident in using the internet.

Procedure

Participants attended a pre-arranged Zoom video conferencing meeting¹ with one or two members of the research team. They were asked to complete a digital consent form and an online demographic survey. The investigator/s verbally outlined the general purpose and instructions of the computer task: to explore and use the pilot website to perform a simulated gambling self-exclusion.

A think-aloud protocol was employed during the testing procedure to examine participants' mental processes (i.e., problem solving, reasoning, and emotional responses) in real-time whilst they navigated the self-exclusion website (Crane et al., 2017; Jaspers et al., 2004). Participants were instructed to say all thoughts, as they come to mind, out loud. The think-aloud protocol is one of the most frequently applied user-centered techniques to evaluate system usability (Maramba et al., 2019). It provides a rich source of usability information, including unique insight into the errors and misconceptions relevant to end users' interactions with various system design elements. These insights can subsequently be translated into actionable recommendations for system development (Nielsen, 1993). Due to the complexity of this activity, participants were asked to practice thinking aloud using an example website (news.com.au) before proceeding to the test website. Once comfortable with the task, participants were administered the test website URL via the Zoom chat function and asked to access and use the site to self-exclude as they would in real life.

The investigator/s unobtrusively observed participants' behaviour and noted specific actions listed in the observation checklist (see measures). They only intervened to assist participants who became stuck during the task and were unable to proceed. The overall self-exclusion process was timed, audio recorded, and video screen captured for subsequent analysis. After completing the self-exclusion procedure, participants were asked to complete a brief online questionnaire (sent via Zoom chat) and asked open-ended retrospective questions. The entire testing process took participants 55 minutes to complete on average, and they received reimbursement in the form of a \$50 retail gift card.

Measures

Demographic and relevant participant characteristic data were collected using self-report items to assess: age, gender, primary language, internet use (days per week, hours in total), primary reasons for using the internet, main method of accessing the internet, perceived computer skills, confidence in using the internet and in using new technology, years and type of gambling problems, and help-seeking for gambling problems.

An experimenter observation checklist (adapted from Hong et al., 2014; see Appendix B) was used to record: a) completion time per task (seconds), b) performance ('1 = without error', '2 = with error', '3 = needed assistance'), c) other comments (e.g. nature or description of errors) as participants

¹ The original pre-Covid-19 study design required face-to-face participation in a computer room at the University of Sydney Brain and Mind Centre. The protocol was transformed to an online modality to ensure adherence to social distancing regulations.

chronologically progressed through each stage of the website (i.e. accessing home page, viewing registration instructions, image capture, entry of personal details and self-exclusion preferences, ID verification, declaration of agreement, additional browsing).

Systems Usability Scale (SUS; Brooke, 1996) is a well-established 10-item self-report Likert scale designed to measure perceived overall usability of systems and technology. Participants rank their agreement with each item from 'Strongly Disagree' (1) to 'Strongly Agree' (5), with an example item including 'I found the tool was easy to use'. A composite usability score (out of 100) is calculated using scoring instructions found in the SUS user guide (Sauro, 2011). The standard industry benchmark for good usability is a score exceeding 80 which indicates 90 – 95% of individuals consider the website to be highly useable and would recommend it to their peers (Lewis & Sauro, 2018). A score of 68 is the minimum score for a website to be considered usable (Lewis & Sauro, 2018).

Two open-ended retrospective questions included: (1) Can you describe any section/s of the website that you found difficult to navigate or use? (2) Can you suggest one or two ways in which we can improve the self-exclusion website?

Analysis

Descriptive statistics (frequencies, percentages, means and standard deviations) are presented for demographic, observational and SUS data, and compared to established benchmarks where these are available in the literature. To guide our interpretations of the quantitative findings, we set provisional expectations that the mean overall completion time should not exceed 30 minutes (target of 15 minutes), with minimal noncritical errors, zero critical errors, and a 100% self-exclusion completion rate. All transcribed qualitative data were separated into discrete thematic units relevant to usability, then organised into thematic categories according to the procedures outlined by Braun and Clarke (2006, 2019). Representative quotes were extracted from the transcripts to illustrate the themes identified. Qualitative-quantitative data were triangulated to identify and investigate any sources of error in the self-exclusion workflow (see Dumas & Redish, 1993).

Major Findings

Behavioural Observation

Participants took on average 15-16 minutes to self-exclude using the website. This finding was consistent with our target completion time. As indicated in Table 5, most self-exclusion sections were performed in under one to two minutes and without error, however, participants required experimenter assistance in entering their personal details and venue selection, which was contrary to our usability target.

Table 5. Experimenter observation sheet data – examining completion speed (seconds) and errors per website task

Task	Seconds to complete M (SD)	Range (sec)	Performed without error n (%)	Performed with error n (%)	Required assistance n (%)
1. Read self-exclusion information	205.6 (162.27)	15-513	10 (100)	-	-
2. Image capture/edit/upload	61.7 (48.26)	14-134	10 (100)	-	-
3. Enter personal details	138.1 (77.7)	52-294	4 (40)	5(50)	1 (10)

4. ID scan upload	74.2 (53.7)	15-153	9 (90)	1 (10)	-
5. Select timeframe	40.8 (50.4)	3-146	9 (100)	-	-
6. Select venues	197.2 (133.2)	38-332	1 (10)	3 (30)	5 (50)
7. Select areas	11.7 (12.11)	2-36	10(100)	-	-
8. Opt-in to add help	30.3 (23.1)	2-76	10 (100)	-	-
9. Review data entered/read terms and conditions	153.3 (110.8)	12-358	10(100)	-	-
10. Confirm signature	10.5 (6.8)	3-23	10 (100)	-	-
11. Confirmation emails	23.9 (19.3)	4-73	10 (100)	-	-

System Usability Score

The average SUS score was 84 out of 100 which corresponds to a highly usable system rating. The range of individual scores are represented in Figure 8. One participant indicated that their score of 60 was largely attributable to the “clunkiness” of selecting venues using the system, and the potential for this to cause usability issues for less tech-savvy website users.

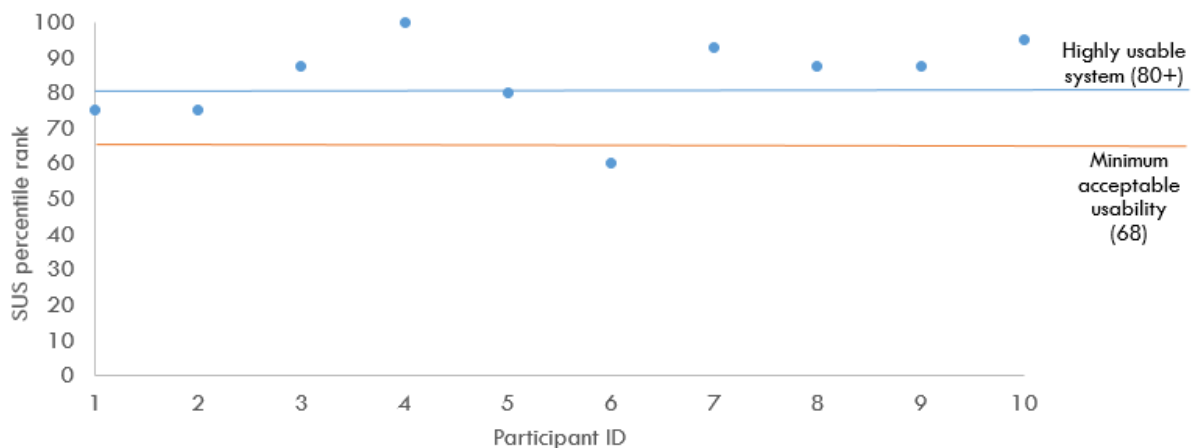


Figure 8. System Usability Scale (SUS) data illustrating participants’ scores with minimum and highly acceptable usability levels

Qualitative Results

Five thematic categories were identified in the qualitative data obtained from the think aloud protocol. Qualitative findings supported those of the quantitative analysis; they provided greater context and detail relating to participants’ experiences using the website, including identified usability issues.

Perceived Ease of Use

Most participants commented on how easy the website was to use and navigate. Many expressed positive opinions of the website and their expectations were satisfied. Participants indicated that the

content of the website was easy to follow and understand, allowing them to move through the website intuitively and within reasonable a timeframe.

"I thought it was pretty short, if I was doing it without talking to you guys..."

"Honestly, I think it is, is exactly how it should be. It's simple. it's to the point, I think it's very well written. It's very, it's you know, it's not too complicated"

A few participants voiced concerns relating to specific user groups. For example, elderly users, internet/computer illiterate, and people with impaired cognitive abilities will potentially require assistance to successfully navigate the website.

"If you are looking at the older generation, you know, over 40 over 50 over 60s, you know pensioners or whatever, they would probably [need] guidance"

"What if someone has learning disability? I can't read... Audio? Like an audiobook... That's because, yeah... heaps of people can't [read], and I am not a good reader... then that would be [a] problem"

Confusion and Inconvenience

The alpha website contained several technical errors and usability issues which both confused and caused inconvenience for some participants. For example, a redundant second address field confused many participants and was frequently cited as an issue because if it was left blank, users were prevented from proceeding to next page.

"I don't know what's happening. Something's happening. It's not accepting the address"

"I misread that! My bad. I think I may be a little bit confused when I looked at it. I just figured this one was also that one. The city was down here"

Venue selection was another key usability problem that was identified, with several participants indicating that selecting venues took them a considerable amount of time. Approximately half of the participants required assistance and their comments revealed that selecting venues one by one was both tedious and difficult.

"I think probably the only annoyance or thing is that venues selection, because it's just so painfully slow. Do it one by one?"

Some participants offered suggestions on how the website can improve efficiency by enabling them to choose venues more easily.

"What would probably be easier for this [venue selection] would be by region"

"If you could put in, you know just select all, or you know put in suburb or put in your postcode, and do like a radius or select all in each suburb as you go along. Because it is quite a slow process."

Website Aesthetics

Many participants described the website design as clean, well laid out, and aesthetically pleasing. One participant reported positive feelings related to the appropriate use of images displayed on the website:

"Good that there is a photo just to humanise it... the idea that it's actual people running it."

Similarly, participants made positive remarks about the website appearance, layout and colours, that evoked a feeling of calmness and relaxation.

"I think it's brilliant. I love the colour, kind of like that calming and relaxing colour. The pictures you are using are simple. It's not too busy. It's not too messy. It's very easy to navigate"

"I kind of like this. It's just a simple layout, but effective"

"It is a lot more of a finished product than I actually, like had anticipated with like, just I thought, Oh god it's going to be very clunky. You know the 2000 website looking thing. But yeah, you could almost launch that tomorrow And it'd be fine to use, I think."

However, one participant noted that the website could be made even simpler by condensing some of the content.

"It might even be more straightforward without all the blocks of information everywhere. You know what I mean? Like there is there's there was this clear block of information, but when I scroll down, there are more options and things and just try to make it as... so you have to think about the people you make this website for"

Salience of Key Information

Most participants indicated that the website presented concise information with no confusing terms. However, some participants indicated that specific written content needs to be better highlighted so that key information becomes especially salient, in addition to enabling end users to effortlessly reach the desired information and links.

"I am going to just obviously looking at the bold and then just look at what you actually need"

"I think this bit here needs to be sort of highlighted some more... .. They don't realise that actually is a contract"

"I didn't even know [that a hint was there]"

On a related note, one participant indicated that at first glance, they were uncertain of how many forms of ID were required, which spoke to the importance of placing key instructional information at the most appropriate sections of the website.

"If I look at this, I have to go back to read 'one form of photo ID'. Because I see driver's license, passport, proof of age card and student photo ID card. So, I would say just need one. Just put above 'one of these or something', something that has a little title 'one of the below'."

Triangulated Results

As shown in Table 6, triangulation of the qualitative and quantitative findings revealed a total of 28 usability issues, most of which (18/28) were associated with the registration process. 'Actions' include a combination of participants' direct suggestions and solutions devised by the research and development team following interpretation of the current findings. Three-quarters (15/20) of the potential actions were considered 'easy' to implement.

Table 6. User-identified website faults and suggested updates to problem areas

Website Section	Issue	Action	Suggested	Difficulty > 1?	Enacted?
General	• Consumer awareness and engagement	• Link to working, regularly updated social media pages	Yes	Difficult	No
	• Too much word content	• Look for ways to condense text, make sentences 'punchier'	No	Moderate	Yes
	• Font too small	• Consider increasing font size	No	Easy	No
Homepage	• Need to scroll back up to the top of the homepage to view/initiate the self-exclusion registration function	• Top section ('sign up today') follows when scrolling down the page (i.e., a 'sticky section') – should be a smaller version of the top section	No	Difficult	No
	• Support contact number is not salient enough in the footer.	• Include hotline support number in the top (and sticky) section	No	Easy	Yes
	• Needs instructional information about the process	• Include step-by-step instructional video (also add to the landing page)	No	Difficult	Yes
	• Credibility/trustworthiness could be improved	• Add Logos for NSW-ORG, USyd, ClubsNSW (also add to the landing page)	No	Easy	Yes

Additional Support	<ul style="list-style-type: none"> Cannot read top section text before background image loads 	<ul style="list-style-type: none"> Change loading background of the top section to a darker colour for readability of text 	No	Easy	Yes
Registration Landing Page	<ul style="list-style-type: none"> Support needed for CALD populations or individuals with certain disabilities 	<ul style="list-style-type: none"> Provide options for assisted form completion – i.e., audio version of items, different languages, etc. 	No	Difficult	Yes
	<ul style="list-style-type: none"> Legal-binding aspects of the agreement need to be emphasised. 	<ul style="list-style-type: none"> Bold the 'by law you will not be able to exit for minimum 6 months' text. 	No	Easy	No
Registration Process					
Image capture	<ul style="list-style-type: none"> Unclear on this page how many of the listed ID forms are needed to proceed. 	<ul style="list-style-type: none"> Include text to reiterate and clarify that only a single ID form is needed. 	No	Easy	Yes
Personal details	<ul style="list-style-type: none"> Address fields are confusing, and the form won't proceed to next step if the 2nd address line is not filled. 	<ul style="list-style-type: none"> Remove 2nd Address Line and/or change forced response on 2nd address line 	Yes	Easy	Yes
	<ul style="list-style-type: none"> Date of birth item is 'clunky' to complete 	<ul style="list-style-type: none"> Determine if a simpler DOB item format can be used 	Yes	Moderate	No
	<ul style="list-style-type: none"> Labels underneath each form field is not intuitive 	<ul style="list-style-type: none"> Determine if label positioning can be relocated to above the form fields 	No	Easy	Yes
Self-exclusion parameters	<ul style="list-style-type: none"> Missed opportunity to present potential benefits associated with each of the self-exclusion timeframe options 	<ul style="list-style-type: none"> Show estimated savings per timeframe option 	No	Moderate	No
	<ul style="list-style-type: none"> Instructions to use the venue selection field are not salient 	<ul style="list-style-type: none"> Relocate the *Hint* for venue selection from below to above the selection field 	Yes	Easy	Yes
	<ul style="list-style-type: none"> Cannot search or select venues in chunks (it can be tedious and time consuming to select venues individually) 	<ul style="list-style-type: none"> Option to select entire regions or all venues within 'X'km radius of the end user's home address 	Yes	Difficult	Yes
	<ul style="list-style-type: none"> Suburbs with cardinal point description are difficult to locate on the venue finder 	<ul style="list-style-type: none"> Relocate cardinal point descriptor from before to after the suburb name (e.g., East Balmain to Balmain East) 	No	Easy	Yes
	<ul style="list-style-type: none"> Some venues are missing from the list 	<ul style="list-style-type: none"> Allow end users to add a new venue. Pending validation, the venue will be added to the list permanently 	No	Moderate	Yes

	<ul style="list-style-type: none"> • Difficulty using the 'add more venues' (+) function 	<ul style="list-style-type: none"> • Include instruction that pressing (+) will add a new venue selection field line. 	Yes	Easy	Yes
Counselling opt-out	<ul style="list-style-type: none"> • Unclear when and how counsellors will get into contact with end users. 	<ul style="list-style-type: none"> • Add text to clarify the timeframe and mode of contact, e.g., within 48hrs by telephone. 	No	Easy	Yes
Declaration	<ul style="list-style-type: none"> • Legal terms and conditions are overly detailed. The most important points become lost. 	<ul style="list-style-type: none"> • Bold or underline the most important parts of the terms and conditions. E.g., that staff are authorised to physically remove patrons from venues if they refuse to leave. • Determine (legally) if text content can be condensed and readability increased. 	Yes	(A) Easy (B) Moderate	Yes - option B
Confirmation	<ul style="list-style-type: none"> • No clear section for consumer feedback • Unclear that end users are automatically emailed confirmation materials • Purpose of adding third party emails unclear at this stage 	<ul style="list-style-type: none"> • Include 'rate your experience' Likert scale/s • Reduce text content and emphasise that confirmation emails are automatically sent to end users • Clarify and emphasise purpose and instructions for this function 	No Yes No	Moderate Easy Easy	Yes Yes Yes
All pages	<ul style="list-style-type: none"> • Too easy to accidentally exit registration without saving • People forget about an uncompleted saved application • Order of 'Next' and 'Save and Continue' buttons are not intuitive - too easy to accidentally click the wrong button 	<ul style="list-style-type: none"> • Include "are you sure you want to exit" prompt for people who accidentally click 'X' on the application page. • Send reminder emails to complete the application. • Switch the 'next' with the 'save and continue' button and make these further apart. 	No No Yes	Moderate Moderate Easy	No No Yes

Summary and Conclusion

Participants' general response to the self-exclusion alpha website was positive, which is highlighted by some of the favourable quotes elicited from their think aloud responses. Such positivity toward the website is likely related to its high usability rating as scored by the psychometrically validated System Usability Scale. According to industry benchmarks (Lewis & Sauro, 2018), the SUS score obtained suggests that 90-95% of the target end users would find the website easy to use and would recommend it to their peers. This interpretation supports the acceptability of the website which is the focus of investigation in the third and final study of this project. One possible limitation is that experimenter demand effects and acquiescence bias (i.e., where participants' tailor their responses to please the researcher; Mummolo & Peterson, 2019) may have influenced these findings given the study design. However, the risk may be small as participants were confident to point out usability issues and areas for improvement. Multiple usability issues were identified during testing; these were mostly minor in nature and located on the venue selection page of the online registration process. Suggested actions were carefully considered and incorporated into subsequent beta website developments as described in the next section. One notable limitation is the very low response rate recorded using a purposive sampling strategy, which may have biased the sample toward participants who are more confident using Internet technology compared to the broader self-exclusion population.

Beta Website Development

A practical demonstration of the website functionality was given to key members of the Office of Responsible Gambling to receive their initial feedback and so they could offer recommendations. Prior to the demonstration, it was agreed that the research team were free to accept or decline any recommendations made as a measure to uphold the independency of this research project.

Comments offered by the ORG had to two clear themes:

- (1) Scan all content to simplify and condense language where possible (e.g., instructional content, the self-exclusion agreement form).

This suggestion was consistent with findings from the usability study. It was subsequently enacted by reviewing all website text content and revising for brevity and simplicity where possible without losing important information. In particular, the self-exclusion agreement form was substantially condensed into a more reader-friendly version. The condensed agreement form was used for evaluative purposes only and will need to be reviewed by a legal professional prior to implementation.

- (2) Increase robustness of the ID verification process.

A test software development kit was requested to explore the functionality of Australia Post's Digital ID verification product with the MySelfExclusion website. Full integration with an ID verification service will not be practical until the website is being prepared for implementation. The ID verification page of the online application form was modified to include a field for users to enter the number of their selected government issued ID form (i.e., Driver's License, Passport, Photo Card). Using an [Application Programming Interface \(API\)](#), the ID number entered into the field can be matched against official records provided by the issuing authority via the Digital ID system (or another ID verification provider). More advanced software may be utilised (although at significantly greater cost) for automated matching of the image captured by the webcam against the uploaded ID photo, in addition to verification of the 'liveness' of a person taking the webcam image.

Table 2 (above) outlines all updates made to the MySelfExclusion website based on the usability test results, in addition to direct suggestion offered by end user participants during testing. Identified issues, suggested actions, and actions taken were discussed and then systematically addressed by the Technical team and the lead author. Most usability issues and suggested actions were attended to (21/28). Beta updates were prioritised according to the importance and feasibility as they were in developing the alpha version of the site. Level of importance of the actionable usability items in this study was largely defined by the number of times an issue was encountered over multiple test trials. There were several reasons as to why identified issues were not addressed in the beta updates:

- 1) Unfeasibility. E.g., one suggestion to link the placeholder social media icons to actual social media pages - while an important point - would have required social media pages to be developed for the MySelfExclusion service, which was not practical within the scope of the current project. Such ideas are certainly not wasted as they can be carried through to the more advanced stages of web development and implementation.
- 2) Unsupported. E.g., one participant suggested that the font size used for the main body text could be made larger. First, this suggested was treated cautiously given that no other participants indicated that the font size was an issue. Second, an investigation revealed that the current font size (i.e., 16px) met the recommended standard for website design. Consequently, we took no further action in relation to this usability issue.
- 3) Mutually exclusive, i.e., attending to one higher priority item eliminated the need to attend to a separate less critical item. E.g., condensing and clarifying text content throughout the website meant that it was no longer necessary to emphasise particularly important text content.

The beta self-exclusion website was prepared for an evaluation of acceptability at the conclusion of the development activities described above.

Phase 3: Acceptability Evaluation

Study Aims

The purpose of the final study of this project was to evaluate self-exclusion consumers' intention to use the web-based registration system once it was released to the public as a viable pathway to self-exclusion. End user intentions were considered to be the best pre-release proxy for actual use of the website as per the Technology Acceptance Model (see Figure 1 above; Davis, 1989). For this analysis, we integrated elements of extended TAMs (see Belanche et al., 2012; Venkatesh and Davis, 2000) that are directly relevant to self-exclusion technology. Our revised model is shown below in Figure 9.

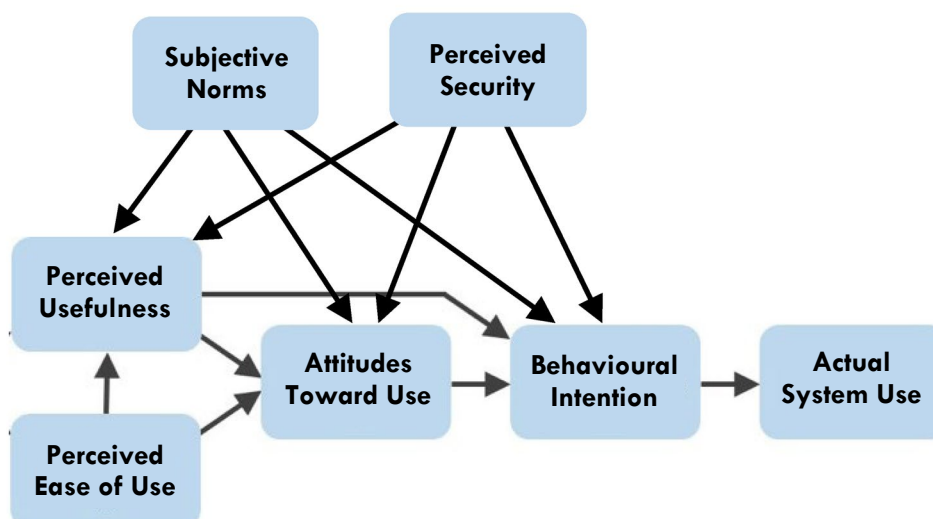


Figure 9. Technological Acceptance Model revised for the current project. Additional factors include subjective norms and perceived security.

Specific aims of this study as assessed through the TAM were to develop a preliminary understanding of:

- 1) End users' overall satisfaction with the self-exclusion website
- 2) The degree to which end users' personal needs and expectations are met by the self-exclusion website
- 3) The potential for end users to utilise the self-exclusion website in real life

Methodology

Ethical Approval and Pre-registration

This study required no further modifications to the previously amended research protocols that were approved by The University of Sydney, Human Research Ethics Committee (HREC) 26th of August 2020 (Project #2020/111). The phase three study methodology was preregistered on the Open Science Framework on 26th of October 2020.

Participants

Twenty participants recruited from the ClubsNSW self-exclusion database participated in this study. Eligible participants were at least 18 years old with personal experience self-excluding from land-based gaming machine venues and had previously indicated their consent to be contacted for research participation. A total of 302 study invitations were sent to potential participants via email and up to

two reminder emails were emailed to those who did not respond following the initial invitation. Out of 302 invitation emails sent, 38 people accessed the embedded URL to begin the study (12.6%), and 20 completed it (6.6% participation rate). A low response rate was anticipated based on our experience of recruiting from this sampling frame for the phase 2 study. The final sample size of 20 is adequate for the purpose of this pilot study (Hertzog, 2008; Kieser & Wassmer, 1996).

In terms of sample demographics, over half of the participants were men (60%), 46 years old on average ($SD = 10.92$ years), predominantly Caucasian (80%), half were married or living with a partner (50%), most were employed (80%), and their highest education level tended to be year 10 (25%) or a trade certificate (35%). Most participants reported using the internet every day (80%) for 4.25 hours on average, mainly to use social network sites (45%), access media content (30%), and to search for information (30%). The majority of participants reported that they were either quite (40%) or extremely (55%) confident in using the internet to perform everyday tasks (Figure 10). Most believed that they had either adequate (25%), good (30%), or excellent computer skills (40%). More than half of the participants believed they were either somewhat (50%) or extremely (15%) likely to try out new technology before others do, whereas 25% felt they were neither more or less likely and 10% somewhat unlikely.

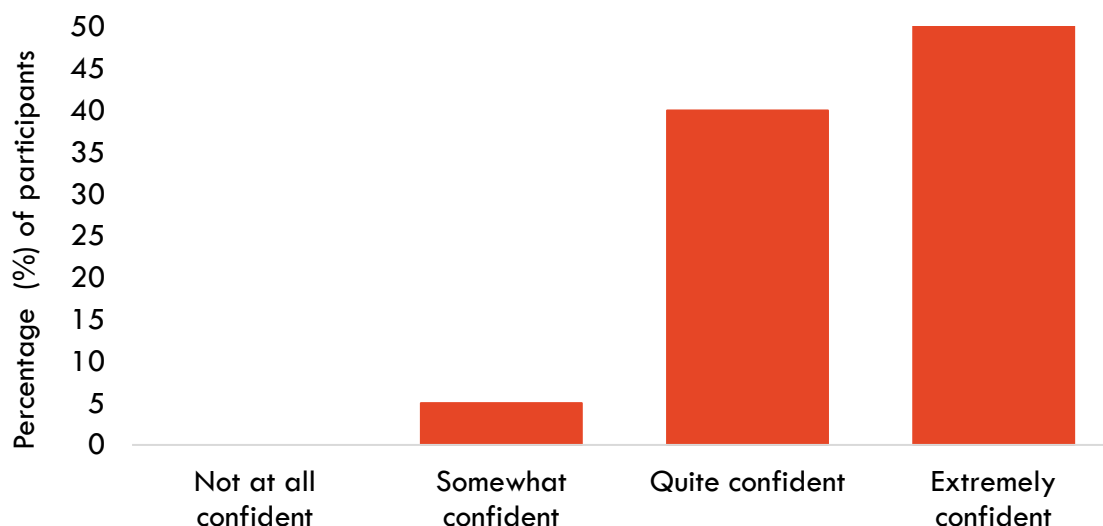


Figure 10. Participants self-reported level of confidence using the internet to perform everyday tasks (e.g., searching for contact details, paying bills, scheduling meetings/appointments, purchasing items online, communicating via email or chat) (N=20).

Over the last six months participants gambled 2.2 ($SD = 1.93$) days in a typical week for an average of 2.4 ($SD = 1.76$) hours and spending \$327 ($SD = \390) each day. Participants in this sample reported experiencing gambling problems for an average of 14.25 years ($SD = 6.83$), with almost all participants attributing their gambling problems to playing EGMs in-person (90%). Average estimated debt acquired due to gambling was \$27,500 AUD ($SD = \$10,074$). Most participants met the classification criteria for a gambling problem as scored by the PGSI (80%). Seventy percent of the sample had sought gambling help with a counsellor or psychologist in addition to self-excluding.

Procedure

Study invitation emails contained a URL link to a Qualtrics hosted online survey. The initial pages of the online survey included the participant information sheet and a tick-box consent form. Consenting participants were asked to complete a series of relevant self-report demographics, attitudinal, and behavioural questions, in addition to the PGSI (see Measures below). Midway through the survey, participants were presented with a URL to the self-exclusion website with instructions to open the link in a separate browser tab and to “take time browsing the website features and use it to trial the self-

exclusion procedure which should take about 15-20 minutes to complete". Participants were instructed to leave the Qualtrics survey tab open while they used the self-exclusion website and when they had finished, to return and answer the remaining survey questions relating to their experiences and perceptions of using the site. This entire process took participants on average 26 minutes to complete. They were reimbursed with a \$30 gift voucher for their time and effort.

Measures

The online survey included self-report questions to elicit demographic information on participants' age, gender, relationship status, ethnic background, employment status, and highest education level. One block of questions asked about self-reported internet use (days per week, hours in total), primary reasons for using the internet, main method of accessing the internet, self-rated computer skills, confidence in using the internet, and perceived likelihood of using new technology before others. Inclusion of these questions was informed by their relevance to the fully online and self-directed structure of the pilot self-exclusion website.

The online survey included questions relevant to participants' gambling history: gambling frequency (days/week over past six months), gambling duration (hours/typical day), gambling expenditure (\$ losses/typical day), number of years gambling has been a problem, most problematic gambling form, debt acquired due to gambling, help-seeking for gambling problems.

Problem gambling status over the past 12 months was assessed using a 9-item self-report screening instrument – the Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001). Scores for each 4-point Likert item (0 = never; 3 = always) were summed and ranged between 0-27. Total scores were then assigned to one of four categories: non-problem (0), low risk (1–2), moderate risk (3–7), and problem (8+) gambling in accordance with the scoring guidelines (Ferris & Wynne, 2001). The PGSI is one of the most commonly used problem gambling screens in the literature and has previously demonstrated strong psychometric properties (Ferris and Wynne 2001; Mcmillen and Wenzel 2006; Wynne, 2003).

Participants level of satisfaction with individual core components of the self-exclusion website was assessed using a 5-point bipolar Likert scale (0 = very negative; 4 = very positive). One question asked participants to rate their level of satisfaction using the self-exclusion website compared to their experience of the ClubsNSW MVSE registration process (0 = far less satisfied; 4 = far more satisfied). An open text follow-up question was included for participants to elaborate on their responses to the aforementioned item.

The TAM was measured using a combination of researcher-developed items and items adapted from prior studies assessing this construct (Hakkak et al., 2013; Lee & Wan, 2010; Venkatesh & Davis, 2000; see Appendix C). A total of 28 5-point Likert question (0 = strongly disagree; 4 = strongly agree) were included in the scale to measure *perceived usefulness* (9 items), *perceived ease of use* (9 items), *attitudes toward use* (3 items), *behavioural intention* (3 items), *perceived security* (2 items), *subjective norms* (2 items). Each dimension was scored separately by calculating the mean score per item to two decimal places.

Lastly, an open text response item was included allowing participants to recommend additional website improvements.

Analysis

Descriptive statistics outlining sample characteristics were calculated as frequencies, percentages, means and standard deviations. Furthermore, PGSI scoring criteria described above were used to identify participants with a gambling problem. Individual item response descriptors (very negative, somewhat negative, neither positive nor negative, somewhat positive, very positive) and the proportional distribution of responses were used to indicate satisfaction ratings per website component. The overall proportion of Likert ratings for all items belonging to a TAM dimension were calculated, in

addition to calculating the mean score for each acceptability dimension. For the purposes of this study, a higher proportion of responses and an average rating of somewhat to very positive will be considered adequate for website acceptability. Website satisfaction and acceptability ratings were triangulated with qualitative open response data to provide a clearer understanding of the characteristics of and perceived benefits of the website to potential users, in addition to highlighting further website upgrades required.

Major Findings

Component Ratings

Table 7 shows participants' satisfaction ratings for each component of the self-exclusion website and online registration process. The highest proportion of participants rated their experience of using four website components as somewhat positive, two components as very positive, and the ratings for one component was split evenly between these categories. These findings suggest that participants were largely satisfied with their experiences using and interacting with the self-exclusion website.

Table 7. Satisfaction with experience of using individual self-exclusion website components

Website components	Experience ratings n (%)					Mean (SD)
	Very negative	Some-what negative	Neither positive nor negative	Some-what positive	Very positive	
1. Entry page (self-exclusion program and parameter information)	0 (0.0%)	0 (0.0%)	4 (20%)	12 (60%)	4 (20%)	3.0 (0.65)
2. Photo ID verification (driver's license, passport)	0 (0.0%)	2 (10%)	5 (25%)	6 (30%)	7 (35%)	2.9 (1.02)
3. Personal information forms (name, DOB, etc.)	0 (0.0%)	0 (0.0%)	7 (35%)	8 (40%)	5 (25%)	2.9 (0.78)
4. Venue selection and self-exclusion parameters	0 (0.0%)	2 (10%)	4 (20%)	7 (35%)	7 (35%)	2.95 (0.99)
5. Face image capture and upload	0 (0.0%)	4 (20%)	5 (25%)	5 (25%)	6 (30%)	2.65 (1.13)
6. Terms and conditions document (including contract acceptance)	0 (0.0%)	2 (10%)	3 (15%)	9 (45%)	6 (30%)	2.95 (0.94)
7. Details of, and links to additional gambling help services	0 (0.0%)	0 (0.0%)	3 (15%)	9 (45%)	8 (40%)	3.25 (0.72)

N.B. The orange fill indicates the most frequently occurring score across each item.

Acceptability

As shown in Table 8 and Figure 11, ratings for each of the dimensions within the technology acceptance model for the website were similarly positive to the component ratings above in Table 7. The largest proportion of responses were concentrated at somewhat agree for perceived security, and strongly agree for all remaining dimensions, with perceived usefulness and attitudes toward use receiving the strongest endorsement from participants. These findings are consistent with our a priori threshold for the website to be considered acceptable.

Table 8. Perceived participant usefulness scores relating to MySelfExclusion (Beta) website across Technology Acceptance Model (TAM) variables

TAM variables	TAM dimension item ratings n (%)					Total score Mean (SD)
	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat Agree	Strongly Agree	
Perceived usefulness	4 (2.2%)	3 (1.7%)	27 (15.0%)	36 (20.0%)	110 (61.1%)	3.36 (0.75)
Ease of Use	13 (7.2%)	10 (5.6%)	42 (23.3%)	48 (26.7%)	67 (37.2%)	2.81 (0.62)
Perceived security	5 (12.5%)	5 (12.5%)	6 (15.0%)	13 (32.5%)	11 (27.5%)	2.50 (1.06)
Subjective norms	2 (5.0%)	0 (0.0%)	9 (22.5%)	10 (25.0%)	19 (47.5%)	3.10 (0.77)
Attitudes toward use	4 (6.7%)	1 (1.7%)	9 (15.0%)	9 (15.0%)	37 (61.7%)	3.2 (1.17)
Behavioural intention	6 (10.0%)	1 (1.7%)	17 (28.3%)	10 (16.7%)	26 (43.3%)	2.82 (.91)

N.B. The orange fill indicates the most frequently occurring score across each item.

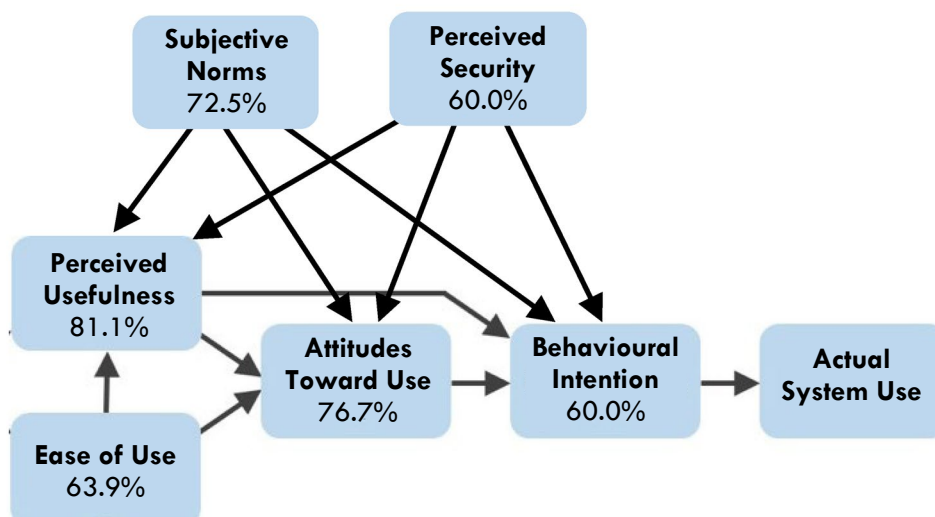


Figure 11. Proportion of item responses rated as somewhat or strongly agree per dimension of the revised Technological Acceptance Model.

MVSE Comparison

Figure 12 shows that compared to their experiences self-excluding via the ClubsNSW MVSE program, three quarters of participants were either somewhat (40%) or far more (35%) satisfied with the MySelfExclusion website process.

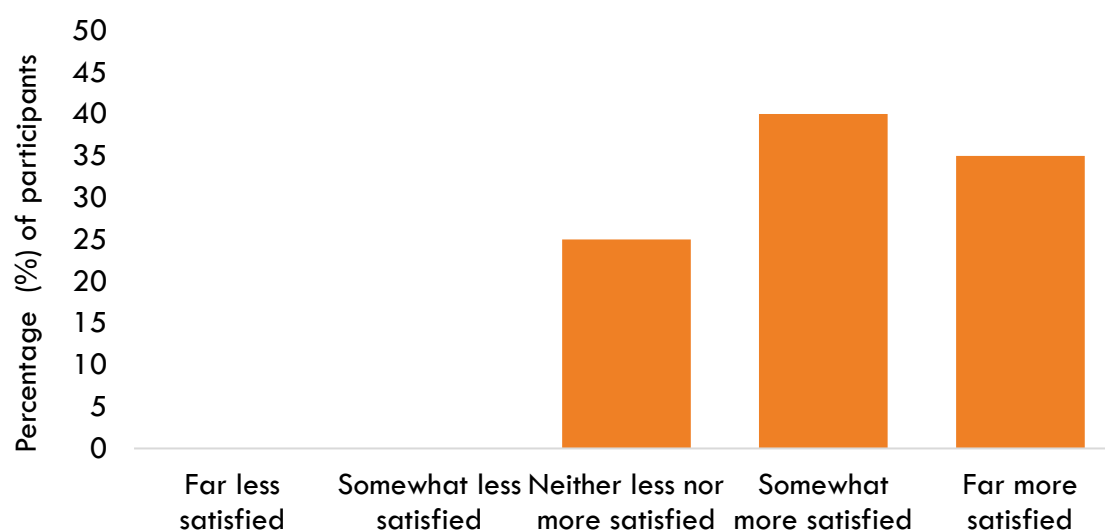


Figure 12. Participants self-reported level of satisfaction with the MySelfExclusion website self-exclusion process compared to their experiences of the ClubsNSW MVSE process (N=20).

Open text follow-up responses revealed that participants found MySelfExclusion to be comparatively easier, faster, convenient, more confidential and a less embarrassing alternative to traditional face-to-face methods (see Table 9). Participants elaborated on the unique benefits of online vs. in person methods of self-exclusion, indicating that it provides a greater sense of autonomy and ownership over their gambling problems. An additional benefit of online self-exclusion was that it allowed individuals to customise the level of support they sought throughout the process to match their own readiness for help-seeking. Participants explained:

"It takes less time and is a lot less embarrassing..."

"I had a terrible experience at one of the clubs that I self-excluded – [they were a] younger person - male - that had no idea what I was going through and treated me like an idiot about why I was gambling. I left without completing the process. I was so upset and angry it still hurts to this day. This is why I jumped at the chance of helping you with this online version."

"I think it's great to give people access to this feature [MySelfExclusion]. I actually looked myself on how to do it, but couldn't find any relevant information previously. This is also great in the fact that some people aren't ready to seek face to face help and would benefit so much from this"

"I was far more satisfied using this service as it would allow me to take steps to get help and curb an addiction without having to embarrass myself by speaking to a staff member or manager that I could potentially see every day and admit what was going on. Further, it would also allow someone that may have increased anxiety to get the help they need/want without engaging in a conversation that they may not be comfortable participating in face to face."

Criticisms of the website tended to relate more to broader issues that are associated with current self-exclusion systems, such as venue-based difficulties in detecting individuals who are breaching their agreements. Although participants suggested that using the website as a centralised database for a nationwide program could reduce these detection issues, stating: *"Having your details on record means that any venue will be able to identify you straight away - in the past you would exclude yourself from some but not all venues."*

Table 9. Reasoning underscoring consumers positive or negative perceptions of the MySelfExclusion website experience compared to MVSE system

Website perceptions	Reasoning for Positive perceptions	Reasoning for Negative perceptions
Self-exclusion experience in current website compared to MVSE pathway	<ul style="list-style-type: none">• Ease, convenience, time, and effort-saving• Reduced shame, embarrassment compared to in person methods• Reduced reliance on counsellors and staff (greater autonomy)• Potentially more secure than existing methods (more control over staff members with access to data)	<ul style="list-style-type: none">• Current in person system has poor detection of breaches at clubs – concerns that MySelfExclusion will be similarly limited• Security issues (i.e., website showing expired security certificate)• Feeling greater sense of accountability if completed in person versus online

Suggested Improvements

Just over half of the sample indicated that no improvements to the website were required (n=11, 55%), largely praising the increased convenience and ease of completing the necessary steps to self-exclude:

“I think the website looks good. Being able to access and do this process online is so much more appropriate for people, whether they can’t access face to face or prefer it”.

“It all seems good to me. I didn’t have any trouble with the website when I used it and nothing really jumped out at me that could be improved.”

Participants showed strong support for launching the system and expressed eagerness for the web-based system to be “brought in”. Of those who did suggest changes or flaws, as above, most suggestions reflected broader systemic issues with self-exclusion (i.e., the 35-venue cap per individual self-exclusion). However, a few participants provided strategies for integrating the website into the current repertoire of help services (see Table 10).

Table 10. Suggested improvements to MySelfExclusion website process (overall and specific areas)

Areas of website improvement	Description of issue	Proposed solutions
Overall experience	<ul style="list-style-type: none"> Unclear of the relationship between MySelfExclusion and existing MVSE program 	<ul style="list-style-type: none"> Incorporating MVSE logo on site and clarifying affiliations
Personal detail collection	<ul style="list-style-type: none"> Used a public computer to complete this self-exclusion Privacy certificate error on website 	<ul style="list-style-type: none"> Kiosks available onsite (with internet connection and helpers if required) Organising automatic renewal of SSL privacy certificate
Self-exclusion (Venue selection)	<ul style="list-style-type: none"> Unable to see venues (issues accessing website) Wanting to select > 35 venues at a time Venue list by suburb 	<ul style="list-style-type: none"> Opportunity for dedicated website staff to assist individuals N/A (not feasible with current detection systems) N/A (already integrated)

Summary and Conclusion

Online acceptability testing was conducted using 20 self-exclusion consumer participants in an ecologically valid setting. Quantitative findings indicated the acceptability of the self-exclusion website in terms of its separate process components and with respect to key dimensions of the TAM framework. Participants largely found the web-based self-exclusion process to be a far or somewhat more satisfying experience compared to using the existing ClubsNSW MVSE system. Qualitative responses supported quantitative acceptability ratings with most participants endorsing the time saving, convenient and discrete nature of the website, indicating they would use it as soon as it was live as well as recommending it to others. A notable limitation of the current study design is the subjective measurement of acceptability dimensions that may not accurately reflect the website's objective utility nor predict actual use. Subjectivity bias was observed in the current study when some participants showed difficulty separating their real-time experience of using the MySelfExclusion website with existing attitudes toward self-exclusion programs based on their past experiences. Accordingly, many of the criticisms and suggested improvements were directed at self-exclusion programs in general rather than the website. Nevertheless, triangulated quantitative-qualitative data indicated that privacy and security assurances could be further improved. Based on the current findings, it is evident that the preceding iterations of web development and research activities, including a comprehensive requirements analysis and usability testing, contributed to the creation of an acceptable web-based self-exclusion tool which meets consumer needs and preferences.

General Discussion

Supported by national consumer preferences and informed by self-exclusion advancements in other international jurisdictions, a single online portal for self-directed registration represents the next logical step for land-based self-exclusion programs in NSW, and in Australia more broadly. Such a system will offer individuals experiencing gambling problems easier access to self-exclusion by allowing them to avoid the unnecessary shame, embarrassment, time and effort that is associated with traditional face-to-face registration procedures (Abbott et al., 2011; Hing, Tolchard et al., 2014; Nowatzki & Williams, 2002; Parke et al., 2015; Pickering et al., 2018). Rather than replacing face-to-face registration, a web-based platform would offer an alternative pathway to entry into self-exclusion in addition to existing methods. Consistent with international statistics (Håkansson & Henzel, 2020; Tucker, 2019), we expect the introduction of a web-based self-exclusion platform to produce a similar increase in self-exclusion uptake in NSW, thus enhancing its impact in minimising gambling harm.

The current research project involved important formative steps in the ultimate delivery of a statewide online exclusion portal and register. Three interlinked mixed methods studies were incorporated to: (1) identify key design and functional requirements for a self-exclusion website and important contextual considerations; (2) evaluate the ease in which self-exclusion consumers can navigate and use the self-exclusion website to complete a self-exclusion registration; and (3) evaluate self-exclusion consumers' general approval of, and intention to use the web-based self-exclusion system upon implementation. Successive studies were designed to build upon findings from the previous study. Development of the alpha and beta versions of the pilot website were interspersed strategically so that findings from each study were directly relevant to a specific stage of development. The overall project structure was based on a codesign framework which emphasises the involvement of key stakeholders and an iterative process in the design, development, and delivery of health-related services (Dawda & Knight, 2017). The co-design approach was ideal for this project given the wealth of knowledge and practical experience of various groups in terms of their level and type of engagement with self-exclusion in NSW. It is important to note that we consider end users to be the primary stakeholder group given the aim of self-exclusion to minimise gambling harms in this population.

Requirements

Results of a qualitative content analysis of focus groups and interviews with self-exclusions consumers, gambling counsellors, policy makers and gaming venue staff revealed surprisingly consistent perspectives across groups with respect to optimal features and functioning for the self-exclusion website concept. Main categories and subcategories identified in the content analysis ranged from general website qualities or attributes to specific features and functioning, requiring a range of highly sophisticated to simple-to-enact web development solutions. Not all proposed features are actionable, or they fall outside the scope of the current project, however they do provide a useful conceptual framework to guide future development and implementation activities. Moreover, the findings are applicable to inform development of web-based self-exclusion programs more broadly.

Key Website Attributes

User-friendliness in terms of the website being very simple to navigate and accommodating of individual user needs (e.g., compatible across multiple Internet devices) was perceived as especially important. As acknowledged by the study participants, such attributes take on increasing importance with systems designed for vulnerable patient groups for whom distress and ambivalence toward change are common psychological features (e.g., Ben-Zeev et al., 2013). Participants' emphasis on usability in the results reinforces the utility of planned usability testing in the second phase of the project. End users' purported emotional vulnerability may also be addressed by creating a supportive and encouraging website environment. Participants suggested

this could be achieved via aesthetic elements of the web design (e.g., use of ‘calming’ colours and positive imagery). Researchers and developers have recently begun testing and implementing game design elements (i.e., ‘gamification’) into eHealth interventions and responsible gambling tools to minimise premature dropout and increase ongoing utilisation (Sardi et al., 2017; Griffiths, 2019). Gamification techniques may be useful in incentivising self-exclusion completion.

Transition to Online: Process, Challenges, and Solutions

The findings confirmed the requirement of a fully web-supported self-exclusion process, unlike some programs (e.g., BetSafe, ClubsNSW MVSE) that use blended online/postal mail or online/face-to-face approaches. Participants drew from their knowledge of face-to-face self-exclusion procedures then integrated this with their understanding of relevant online services to describe their own conceptualisation of a web-based self-exclusion process. Figure 13 below depicts the key stages identified, presented in sequential order.

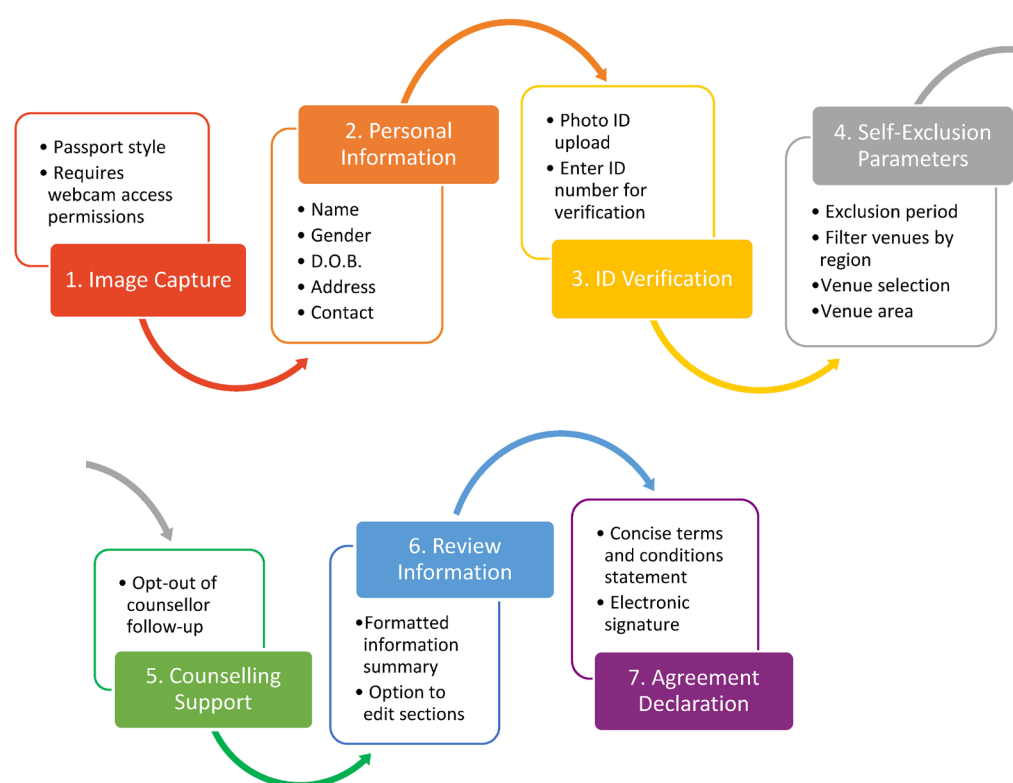


Figure 13. Web-based self-exclusion registration process for gaming machine venues in NSW

Transforming face-to-face procedures onto an online format raised some challenges with respect to the web development, however, these are quite surmountable with the appropriate use of existing Internet technology. Challenges mostly related to the absence of an informed professional to verify end users’ identity and to guide them through each step of the self-exclusion process. Automated identity verification software has been successfully applied to comparable online tasks that were previously completed face-to-face (e.g., online banking; Goode, 2018). Multiple commercial ID verification companies already exist (see [page 28](#) for specific examples) and some, including Australia Post’s Digital ID are accredited under the Australian Government’s Trusted Digital Identity Framework (TDIF). To offset the lack of in-person support during the online registration process, various support features can be integrated into the website functions, such as multimedia instructional content, a frequently asked questions section, or a telephone or live chat support hotline.

Links to Counselling

Relevant information and links connecting end users to a range of additional help services was highlighted as the most important auxiliary website feature. This is consistent with research showing that self-exclusion can serve as a gateway into more intensive treatment for gambling problems and that counselling support in addition to self-exclusion leads to superior outcomes (Blaszczynski et al., 2007). Suggestions to incorporate both gambling and non-gambling specific services are consistent with a multidimensional gambling recovery model (Pickering et al., 2019), and research showing that gambling harm is experienced across multiple domains such as financial, interpersonal relationships, legal, occupational, physical, and emotional health (Shannon et al., 2017).

Data Security is Critical

Study participants identified data security as being a primary overarching concern. This is because the website database is required to store highly sensitive data that could potentially have significantly detrimental impacts on end users if their personal and confidential information were to be compromised either maliciously or accidentally. The high sensitivity level of end user data is partly explained by pervasive social stigma that is associated with gambling problems (Hing et al., 2015; Hing, Holdsworth et al., 2014). Data can be secured both at the transmission and storage phase. For data transmission, a Secure Sockets Layer (SSL) should be installed to establish encrypted links between the web server and end users' device to transfer sensitive information. For data storage, a centralised database containing multiple security features including advanced standard encryption, database activity monitoring and auditing, robust authentication and authorisation mechanisms, limited system privileges, and thorough data management protocols. Although an SSL can be installed with relative ease via the website server, security measures for data storage must be built into the back end of the website which is considerably more complex and resource intensive and goes beyond the scope of the current project. Participants identified a further consideration relating to data security which was the importance of reassuring end users that it is safe to use the website to self-exclude. To this aim, the website interface should display lay language information to convey to users the advanced level of inbuilt system security. Simple infographics and icons can also be effective in conveying such information and establishing users' trust (Johnson et al., 2020; Nong & Gainsbury, 2019). Another strategy to enhance credibility may be to add the respective logos of the service provider and other partner organisations to the website header and footer.

Socio-political Factors

Professional participants in particular underscored gaining both government and industry support for the system as a critical aspect of a successful system. Efforts to gain support may be informed by an analysis of each group's specific needs and expectations of which the current study provided some insight. Government must ensure the system is consistent with current and future gaming machine and gambling relevant regulations and data privacy laws. For example, an important consideration is integrability of the current website with the forthcoming National Online Self-Exclusion Register, which will provide coverage of licensed online betting sites (Department of Social Services, 2017). Previously, we have pointed to the complexity of Australian self-exclusion systems when arguing for a single unified national system for both land-based and online gambling activities (Pickering et al., 2018). Conversely, industry may be more concerned with costs, impacts on business operations, and disruption to those who gamble recreationally (Choliz, 2018).

Building Awareness

A highly usable and acceptable self-exclusion system will have little impact if target consumers are unaware of its existence. Studies of face-to-face self-exclusion programs have indicated that inadequate promotional efforts and difficulty accessing relevant information about self-exclusion are significant barriers to uptake (Pickering et al., 2018; Hing, Tolchard et al., 2014). The web-based format of the current system will provide new opportunities to apply digital marketing strategies (e.g., via social media, targeted and keyword advertising), potentially attracting a

younger population at the initial onset of their problem gambling (Black & Shaw, 2019; Blaszczynski, 2002).

Alpha Site

Most of the web development activity occurred while building the initial alpha version of the self-exclusion website. Website features, functionality, and content were based predominantly on information derived from the phase 1 requirements analysis as per the research plan. However, the research team's expert knowledge of self-exclusion programs, the developers' recommendations and skillset, and available self-exclusion literature and resources (e.g., the NSW Independent Liquor and Gaming Authority's Standard Self-Exclusion Agreement) also shaped development outputs. We completed the first functioning version of the website prior to commencement of the usability testing. The alpha version facilitated a minimalistic yet fully online self-exclusion registration process and incorporated additional help service information. Multiple system bugs and errors, both known and unknown, were present and not all potential features had been included at this stage.

Usability

In phase 2 of this research, an assessment of usability was conducted in a semi-controlled test environment with self-exclusion consumer participants. Participants in general expressed positive views about the website's potential utility as a convenient and easy-to-use self-exclusion system. Participants' responses suggested that our efforts to build a 'user-friendly' website based on the requirements analysis had been successful. These qualitative findings were supported by a high average quantitative system usability score indicating that approximately 90-95% of users would consider the website self-exclusion portal 'highly usable' and would recommend it to other self-exclusion users (see Lewis & Sauro, 2018, for detailed usability instrument norms). Additionally, the usability score was considerably higher than the minimum industry standard.

Despite these promising results, observational data revealed several system errors and bugs for which the qualitative data provided potential solutions. Multiple usability problems were anticipated by the research and development team given the nature of the alpha testing phase (Larusdottir et al., 2010). Errors were mostly minor and were identified in pages containing the online self-exclusion registration forms. We were able to successfully address 21 out of 28 user-identified issues in subsequent upgrades with higher frequency issues taking priority. In line with the current eHealth literature (Ardito et al., 2011; Brown et al., 2013), identifying and correcting usability issues early in the web development process will prevent such issues from manifesting at a later stage of development when these are more difficult and costly to manage. For the remaining 7 issues, these were left unattended either because the suggested modifications were deemed impractical, they were unsupported by other participants or accepted standards, or because fixing one higher priority issue had removed the need to fix another.

Most participants tended to become 'stuck' at the point of selecting self-exclusion venues, although participants were still able to complete self-exclusion registration within a reasonable timeframe. Not surprisingly, venue selection was the most difficult functionality to incorporate into the website, in terms of making the procedure easy for individuals to perform with minimal instruction and without prior training. Several participants suggested the inclusion of a feature to select all venues in a geographical region or radius. Self-exclusion consumer preferences for a self-exclusion 'select all' venues feature has been reported across several previous investigations (Hing & Nuske, 2012; Hing, Tolchard, et al., 2014; Pickering et al., 2018, 2019). Although this may be feasible for regional and remote locations where few venues exist in the area, it is not feasible in metropolitan areas where many venues are concentrated within a relatively small geographical space. This is

due to the current capacity of venues to monitor a large database of self-excluded individuals based on memory and eyesight alone (see Pickering et al., 2019). Monitoring capacity is expected to improve considerably pending installation of one or more technology-based detection systems in venues (i.e., ID scanning, facial recognition, geofencing; Gaming Machines Amendment Bill, 2020). Thus, a select all venue option may become practicable for land-based gambling self-exclusion with enhanced breach detection capabilities. We devised a compromise solution for the current website by filtering individual venues by NSW region to make the list of choices more manageable for end users.

Other software could potentially be integrated into the venue search and selection feature to enhance functionality and user experience. One option is to add a postcode search filter to reduce the number of candidate self-exclusion venues even further than what is currently achieved via the regional filter. Moreover, a select all venues checkbox would be more feasible if the venues were filtered by postcode as this would result in smaller groups of venues relative to a statewide option. Another more advanced option is to incorporate the Google Maps platform using the API key including location markers of NSW gaming machine venues (most would already be included, while others may need to be added manually). Similar to a Google Maps store locator (<https://developers.google.com/maps/solutions/store-locator>), end users could click and select venues using an interactive map. For both the postcode filter and map features, a 'surrounding suburbs' option may be a useful inclusion to capture venues in close vicinity to the end user's residence (e.g., see <https://www.realestate.com.au/>). Lastly, venues appearing via the search function may be added to and removed from an editable list before confirming the final submission, just as items on an online shopping site might be added to and removed from the cart prior to the final purchase decision. All these suggestions extend beyond what can be achieved using the online forms building tool (Gravity Forms) that was employed in the current project. Custom code or external (proprietary) software will be required to incorporate such features.

Beta Site

Findings from the usability testing revealed that few new features needed to be added to the beta version of the website. Rather, our focus was directed toward refining current features and correcting user-identified errors. We clarified instructions, relocated field labels and buttons in the online form to make the registration process more seamless and intuitive for end users. A filter-by-region item was added to reduce the number of venue options that appeared in the drop-down selection menu. Written content throughout the entire site was revised and minimized, which had the most impact in the self-exclusion terms and conditions section. Key added features included a step-by-step registration instruction video, a multilingual translator plugin, and a user feedback item located on the confirmation page. The full list of beta modifications can be found in **Table 2 above**. Screenshots of the beta website version are shown in **Appendix A**.

Acceptability

The phase 3 study involved an evaluation of the beta website's acceptability among 20 self-exclusion consumers in a pilot trial of the online self-exclusion process in an ecologically valid setting. Positive perceptions of the website as indicated by the combined quantitative and qualitative response data indicate good acceptability and a strong likelihood that this system would be adopted by end users once it was made available for public use (Venkatesh et al., 2003). Perhaps the strongest indicator of the site's acceptability was that most participants reported greater satisfaction with their experience using it compared to past experiences with the currently operational ClubsNSW MVSE program, with no participants reporting a less satisfactory

experience. This finding is particularly notable because the MVSE system – which incorporates the capacity to exclude from multiple venues, options to exclude outside venues with a counsellor, and a central digital information database – is considered to be more technologically advanced relative to traditional self-exclusion interventions (Pickering et al., 2018, 2019).

The positive findings obtained in this study can be partly attributed to the iterative lead up of formative research and development activities culminating in a self-exclusion portal that meets the needs and expectations of target end users. Nevertheless, some frustrations still emerged surrounding security issues and venue selection options, reflecting the need to continually monitor and respond to system issues and user feedback. Expiry of the SSL security certificate during testing resulted in a lower acceptability score pertaining to the perceived security TAM dimension relative to the other model dimensions. The pervasiveness of themes relating to system trustworthiness and security throughout all project stages highlights the importance of these considerations to the general success of the website. These findings are frequently represented in the eHealth literature with even minor cyber security incidents significantly undermining the effectiveness of online health systems (Liveri et al., 2015; Sahama et al., 2013).

The broader literature on technology acceptance suggests that extending the original TAM with relevant additional predictive variables can explain a greater amount of variance in the target population's level of adoption and use (Hakkak et al., 2013; Lee & Wan, 2010; Venkatesh & Davis, 2000). Whilst perceived security and subjective peer attitudes toward use were incorporated into the current model, emerging literature has implicated several other key predictors (Rahimi et al., 2018). Other relevant predictor variables should be considered in future studies to build an accurate understanding of this website's use, including voluntariness of use (Venkatesh & Davis, 2000), computer self-efficacy (Kim & Park, 2012), controllability of system features and output (Pantano & Di Pietro, 2012), and information quality (Diop et al., 2019). Larger sample sizes will be required to gain the most predictive value from future investigations (see limitations below). Finally, technology acceptance is a dynamic construct that is known to shift over time as end users and the environment change (Ajibade, 2018); for example, individuals will become more familiar with an e-system over time. Consequently, ongoing replication of empirical studies and subsequent model refinements are required.

Strengths and Limitations

The major strength of the current research project was in the application of a codesign framework allowing input from key stakeholders to guide the development of a web-based self-exclusion service to ensure that it meets the unique needs and expectation of the target end user population. The use of a mixed-methods research design facilitates triangulation of data in the analyses to gain the most comprehensive understanding of constructs being investigated (Watkins & Gioia, 2015). Compared to the other, quantitative methods offer more precise and reliable measurement opportunities, whereas qualitative methods are more flexible and offer a deeper level of investigation. Lastly, the structured and iterative approach taken in the sequence of studies we conducted ensured that each study was uniquely matched in terms of its timing to specific web development stages. Moreover, each subsequent investigation we performed was both informed by and able to build upon findings from preceding studies.

There were also limitations contained in the current research despite its strengths. Due to the purposive sampling strategy employed, all three studies were vulnerable to the threat of self-selection bias. The potential for such bias was amplified by very low response rates recorded for both studies 2 and 3. Poor response rates are common in self-exclusion studies potentially due to low motivation, high levels of distress, or stigma-related concerns about privacy in self-exclusion populations (Hayer & Meyer, 2010, 2011; Künzi et al., 2009; Ladouceur et al., 2007; Ly, 2010; Steinberg, 2008). However, it is expected that these were impacted to an even greater extent by disruptions related to Covid-19. Due to social distancing restrictions, it was required that all data collection for studies 1 and 2 be transferred to an online format which meant that participants needed personal access to webcam technology and zoom video conferencing software, including

knowledge of how to use these. Arguably, this may have isolated an internet-savvy subgroup of self-excluders who are most likely to utilise a web-based self-exclusion system in the future; however, it simultaneously may have alienated those who are less-internet savvy, thus inflating findings relating to the site's actual usability and acceptability in the broader self-exclusion population.

Other noted limitations are also relevant to sample representativeness. Final sample sizes for studies 1 and 2 were appropriate given the aims and methodological design. For study 3, however, the final sample size was more consistent with a pilot evaluation of acceptability (see Hertzog, 2008). A much larger sample would be required (i.e., $N=161$ based on Structural Equation Modelling requirements) to inferentially test the predictive power of the technology acceptance model we applied to this study.

Lastly, all self-exclusion consumers that were involved in the current research can be classified as having sought formal help for their gambling problems. People with a history of gambling problems but who have not sought formal help were not involved in this research. This 'naturally recovering' cohort make up the largest proportion of the problem gambling population. Despite being notoriously difficult to access and recruit (Subbaraman et al., 2015), they are especially important in the context of gambling research aimed at increasing engagement with available help services

Recommended Future Directions

Multiple future avenues to progress the research, development, and implementation of a web-based self-exclusion system for gaming machine venues in NSW have already been discussed at various points throughout this report. The bullet points below provide a clear summary list of our recommendations regarding important future directions and considerations. Recommendations are presented in no particular order.

Development and Implementation

- Select and integrate external TDIF-accredited ID verification software using the product API key. A balance may need to be struck between end user convenience and security assurance in the grade of verification software selected.
- A user profile dashboard may be incorporated into future upgrades of the website allowing self-exclusion consumers to keep up to date with their current self-exclusion status (i.e., exclusion time remaining, nominated venues, attempted breaches), including options to change and update details, to be notified of and renew the agreement before it expires. A user profile would also integrate well with personalised recovery tracking features and gamified elements.
- Ensure the web content and layout is responsive to tablet and especially smartphone access and use. Future developments should incorporate a smartphone app version of the online self-exclusion portal. A smartphone app would be well-suited to host the user dashboard functions.
- Although one key benefit of a self-exclusion website is for individuals to register remotely, some may find it useful if the website could be accessed in venues either via a kiosk or venue-provided tablet.
- An alternative registration pathway may be incorporated into the website allowing family members to apply for third-party self-exclusion. A critical paths analysis would be required to map how this process transitions to an online format.
- The self-exclusion venue search and selection tool may be further enhanced with a dynamic postcode search filter, a 'select all' venues checkbox, an 'include surrounding areas' option, and the integration of Google Maps API. The scope for individuals to nominate self-exclusion venues en masse will depend on technology-based improvements to venue's self-exclusion detection systems.

- The MySelfExclusion website represents the front-end of an online self-exclusion system. Considerable attention must be directed toward the back-end processes and technology required to build a fully functioning self-exclusion system. This includes set up of a highly secure self-exclusion database, systems to notify venues of new exclusions, database access points for key staff to view relevant self-exclusion data, and a system requesting that counsellors follow up with new self-exclusion applicants.
- Alongside the development of an online self-exclusion portal and database for gaming machine venues in NSW, an important consideration is the national online self-exclusion register being developed in parallel – particularly, how these two systems may integrate in the future.

Research and Evaluation

- A web-based self-exclusion system (including a centralised database) has significant implications for the scope and quality of research that can be carried out to better understand important characteristics of self-excluded populations. As noted above, self-excluded individuals are particularly difficult to recruit which has resulted in a body of literature with small sample studies and an overall low strength of evidence (Gainsbury, 2014). A larger sampling frame would allow more complex and impactful analyses to be applied. For example, predictive modelling techniques could be performed to better understand specific modifiable factors that directly influence rates of uptake (see limitations section above).
- Automated software such as Google Analytics, Adobe Analytics, and Jetpack Stats may be used to collect and analyse comprehensive observational data on how a website is being accessed and used by end users (e.g., number of page views, time spent on page, new/return users, internal searches, exit points). These metrics may be used in the future, in combination with methodologies used in this project, to continually improve the site's usability and conversion rate (i.e., proportion of visitors that submit an exclusion application; Beri & Singh, 2013).
- Ongoing evaluation of the new web-based self-exclusion system will be critical to measure end user outcomes and to identify areas for improvement. It is especially important to monitor for any unintended consequences at the initial point of implementation.
- Proposed new features may be tested empirically prior to their inclusion. To provide one example, a randomised-controlled study protocol may be employed to examine what effect a user profile dashboard with and without gamified elements has on program compliance and gambling behaviour.

Conclusion

Findings based on this research provide a clear and practical framework to guide the development and implementation of a successful self-directed web-based system for self-exclusion from NSW gaming machine venues. The involvement of key stakeholders as well as self-exclusion consumers in this codesigned research is expected to enhance adoption and support for the proposed self-exclusion website among these core groups. Additionally, the involvement of these groups has informed website features and research-based recommendations that are tailored to the NSW context - particularly in terms of the unique gambling environment. The pilot website that was developed in parallel with this research work may be adopted directly for implementation, reproduced, and hosted via a more powerful web server including a highly secure back-end database with a large storage capacity. These upgrades are necessary to ensure the website can manage high end user traffic and meets robust data security standards. The current research represents important formative steps in the development process that will lead to more efficient use of resources in the long run. The role of ongoing research and evaluation is crucial as development of a fully functional online self-exclusion system is scaled up, as the system progresses further toward implementation, and after the system is made fully live. On a final note, we wish to emphasise that registration is only one aspect of the self-exclusion process. Future work should

investigate technology-based strategies to enhance detection rates of non-compliant self-excluded individuals. We anticipate that improvement of detection systems will have a positive impact on end user outcomes and the uptake of self-exclusion programs in the community.

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Appendices

A. MySelfExclusion Website Screenshots

Homepage

NEED HELP WITH MYSELFEXCLUSION? CALL 1800 482 482

[Home](#) [About](#) [Register](#) [Additional Support](#) [Contact Us](#)

Stop Gambling Today with MySelfExclusion

It takes just 15 minutes to join MySelfExclusion and we guide you through each step of the way.

Click the button below to get started.

[REGISTER NOW](#)

WHAT IS MYSELFEXCLUSION?

MySelfExclusion is an easy-to-use website that lets you self-exclude (bar yourself) from multiple NSW clubs and pubs in one simple online registration.

WHO CAN BENEFIT?

Self-exclusion can be a useful tool if you feel that you may have a problem with gambling or are simply looking to cut down or take a break.

WHO ARE WE?

MySelfExclusion was developed by The University of Sydney Gambling Treatment & Research Clinic. The project was funded by the NSW Office of Responsible Gambling.

About Page

About MySelfExclusion

- ✓ MySelfExclusion is a website designed for anyone wanting to exclude (ban) themselves from the gaming machine floor or entire venue of NSW clubs and hotels.
- ✓ This website may be useful to you if you are having difficulties controlling your gambling and want to limit your access to clubs and/or hotels.
- ✓ It provides a way for you to self-exclude online from up to 35 different venues using your own computer, laptop, tablet, or smartphone, and without needing to visit a single venue in person.
- ✓ There are no costs involved with using this service.



Privacy Information

Any personal information collected for your self-exclusion registration will be stored securely in an encrypted digital database. Your information will be disclosed to relevant gambling venues strictly for identification and no other purposes. Please be assured that we take your personal privacy very seriously and have taken all the recommended security measures to ensure that your information cannot be accessed by any other party.

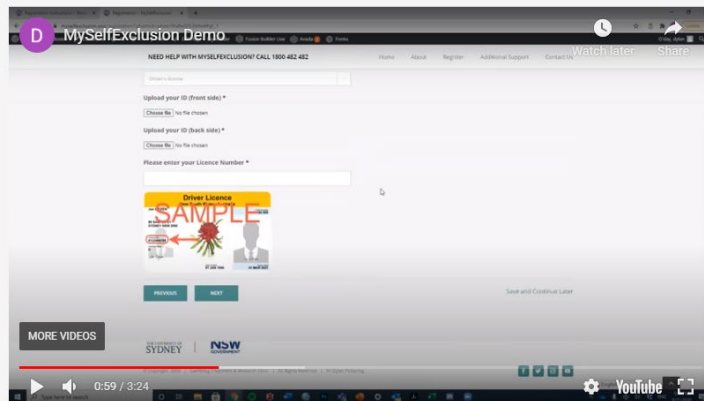
For detailed instructions on how to register, please go directly to the registration section.

[HOW TO REGISTER](#)

Registration Instructions

How Does It Work?

Watch the video below for a demonstration of how to apply for self-exclusion using the MySelfExclusion website.



- Driver Licence
- Passport
- Proof of Age Card

WHAT YOU NEED TO BEGIN

Please make sure your computer or internet device has a functional **web camera** attached. You will need one form of **photo ID** on hand so we can verify your identity. The types of ID we accept are listed to the left. You will also need an active **email address** and **mobile** or **telephone number** so that we can get in touch with you.

7 Steps of MySelfExclusion

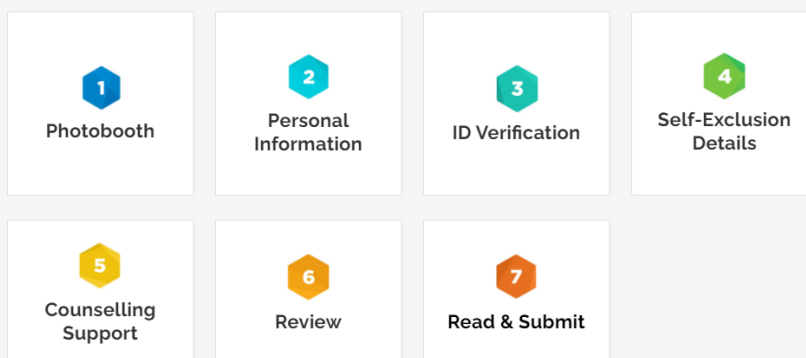




Photo Capture

Please be assured that your image will only be given to the venues from which you have chosen to be self-excluded. Your image may also be used to help verify your identity for registration. It will not be used for any reasons other than these.

Please scroll down to take and review your photo. Click "Take photo" to take a photo, and click "Save photo" to save and start the form.



Take photo



Save photo

Personal Information

Registration

1 Personal Information

2 ID Verification

3 Self-Exclusion Parameters

4 Counselling Support

5 Review Information

6 Agreement Submission

Personal Information

Let's begin by filling in some general information about you.

Full Name *

First

Last

Gender *

Male

Date of Birth *

Address *

Street Address

City

State

Postcode

Please provide the following contact information and click which you would prefer us to use to get in touch with you.

Telephone/mobile *

Identity Verification

Registration

1 Personal Information

2 ID Verification

3 Self-Exclusion Parameters

4 Counselling Support

5 Review Information

6 Agreement Submission

Please select and upload **one** form of photo ID so we can verify your identity.

Photo ID type *

Driver's license

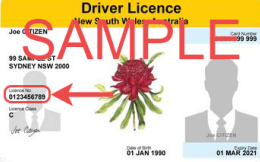
Upload your ID (front side) *

Choose file No file chosen

Upload your ID (back side) *

Choose file No file chosen

Please enter your Licence Number *



PREVIOUS

NEXT

Save and Continue Later

Venue/Timeframe Selection

Personalise Your Self-Exclusion

First, we need to know what period of time do wish to self-exclude? *

6 months

Please select your NSW region *

Greater Sydney (e.g., Sydney City, Inner West, North Shore, Sutherland Shire, Canterbury)

Next, enter the names and locations of clubs and hotels in the Greater Sydney region, NSW, from which you would like to self-exclude (You may choose up to 35). *

The venue list is organised alphabetically (A-Z) by suburb name.

Click '+' to add more venues and '-' to delete venues.

Venue Name

- Select A Venue -

Were you able to find all the venues from which you wanted to self-exclude listed above? *

☒ Yes, I could find all my venues

☐ No, one or more venues were missing

Last, specify the area within these venues from which you would like to self-exclude. *

The entire venue

PREVIOUS

NEXT

Save and Continue Later

Hear from a Counsellor

Registration

1 Personal Information2 ID Verification3 Self-Exclusion Parameters4 Counselling Support5 Review Information6 Agreement Submission

Do You Want to Hear from a Counsellor?

Free and confidential gambling counselling is available in 270 locations across NSW. Our service can connect you with a counsellor near you.

Tick one of the options below to indicate whether you would like to be contacted about setting up an appointment with a gambling counsellor. *

☒ YES, I do wish to be contacted by a counsellor for follow-up support

☐ No, I do not wish to be contacted by a counsellor for follow-up support

You will be contacted by a qualified gambling counsellor in the **next 48 hours** for a brief 15 minute telephone consultation. You will be given an opportunity to schedule additional face-to-face, video or telephone counselling sessions.

PREVIOUS

NEXT

Save and Continue Later

Review/Edit Information

Review Your Information

Personal Information

Application ID

9207299541

photoId

photo5fe077b56c9ec

Full Name

John Smith

Gender

Male

Date of Birth

16/10/2020

Address

135 George Lane
Sydney, NSW 2000
Australia
Map it

Telephone/mobile

400313400

Email

john.smith@hotmail.com

Digital Declaration

Registration

1 Personal Information 2 ID Verification 3 Self-Exclusion Parameters 4 Counselling Support 5 Review Information 6 Agreement Submission


Your Self-Exclusion Agreement

The final step is for you to read the Agreement form below, digitally sign your name at the bottom, and click submit. Your self-exclusion agreement will take immediate effect.

By signing this Agreement, I

1. Agree that I will not attempt to enter the nominated area(s) of the Venue(s) I have selected for this Self-Exclusion Agreement for the nominated period from the day I sign this Agreement.
2. Do not wish to receive promotional materials from the selected Venues(s).
3. Agree for my personal information to be forwarded to the selected Venues for the purpose of identifying me.
4. Understand that my personal information will be stored securely until my self-exclusion ends at which time it will be deleted.
5. Acknowledge that I have been provided with information about gambling counselling services.
6. (Only applicable if you opted into being contacted by a counsellor) Agree to having my personal information forwarded to a gambling counsellor who will contact me

Signature *




21/12/2020

PREVIOUS

SUBMIT

Save and Continue Later

Submission Confirmation



Submission Confirmed

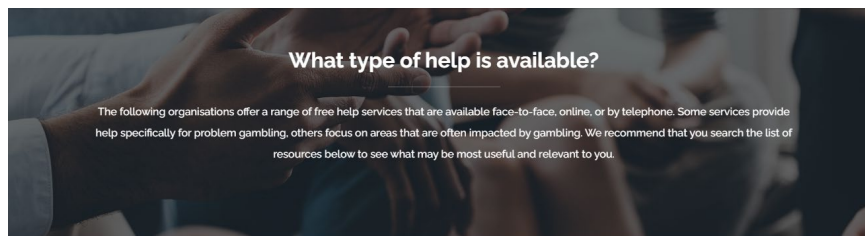
You have successfully submitted your application for self-exclusion. Congratulations! We have **already emailed you a summary of your self-exclusion agreement** to keep on record.

We can **also email these documents to other people** (e.g., your partner, family member, or counsellor) to provide evidence of your self-exclusion. If you would like us to **let others know about your self-exclusion**, please enter **their email address(es)** into the field(s) below.

Others' Email Address (you may enter up to 3)

SUBMIT

Additional Help Resources



Gambling Support

Gambling Help NSW



Gambling help online is a 24/7 free, confidential service available across NSW to assist those experiencing gambling

Gambling Treatment & Research Clinic

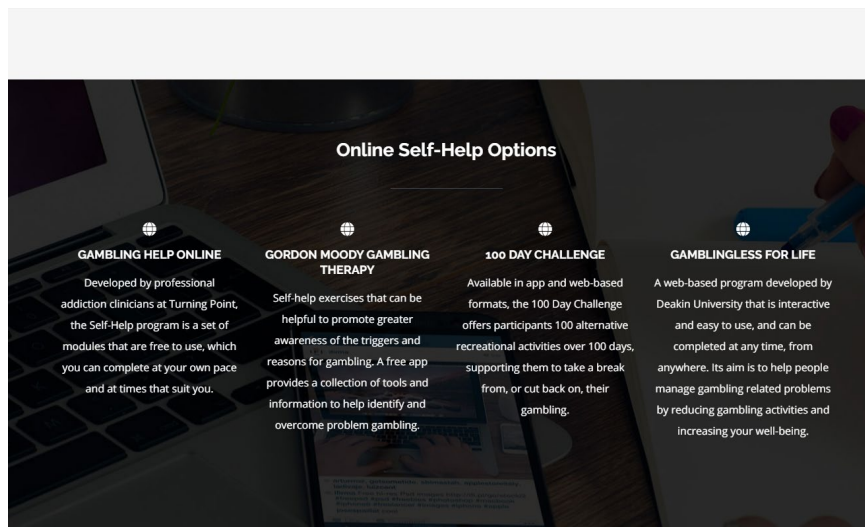


The University of Sydney, Gambling Treatment & Research Clinic service provides

Gambling Treatment Program









The St Vincent's Hospital Sydney Gambling Treatment Program provides free, confidential, and effective



Contact Us

NEED HELP WITH MYSELFEXCLUSION? CALL 1800 482 482


   

[Home](#) [About](#) [Register](#) [Additional Support](#) [Contact Us](#)


Contact Us

Please contact us if you need help with MySelfExclusion.
We will get back to you as soon as possible.




Address

Level 2, 94 Mallett Street,
Camperdown NSW 2050




Working Hours

9am - 5pm, Monday to
Saturday



Phone

1800 482 482







Email

psychology.gtc@sydney.edu.au

Need Help with MySelfExclusion?

Looking to leave feedback?

Simply enter your full name, email address, a subject line, and a brief message. After pressing submit, if a response is required, please allow 2-3 business days for someone from the Gambling Treatment and Research Clinic to get in touch with you via email.

NAME

EMAIL

SUBJECT

MESSAGE

B. Experimenter Observation Sheet for Usability Testing

Section	Task	Completion time (seconds)	Performance 1 = without error 2 = with error 3 = needed assistance	Other comments/remarks (e.g., description of errors)
Entry page	Read self-exclusion information			
Image capture	Image capture/edit/upload			
Personal details collection	Enter personal details			
ID verification	ID scan/upload			
Self-exclusion	Select timeframe			
	Select venues			
	Select areas			
Opt-out help services	Opt-out of additional help services information			
Terms and conditions	Read terms and conditions			
	Signature confirmation			
Confirmation & notifications	Add additional emails for notification			

C. Self-Exclusion Technology Acceptance Model Questionnaire

	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly agree
Perceived usefulness					
(1) The self-exclusion website has all the functions that I expect it to have	1	2	3	4	5
(2) I found the website to be a convenient method for self-exclusion	1	2	3	4	5
(3) I found the information provided on the website useful	1	2	3	4	5
(4) Using the self-exclusion website saved me the embarrassment of having to self-exclude in-person	1	2	3	4	5
(5) Using the website to manage my own self-exclusion process made me feel empowered	1	2	3	4	5
(6) I think that the website is a good alternative for people who do not wish to self-exclude in-person.	1	2	3	4	5
(7) Using the self-exclusion website saved me time	1	2	3	4	5
(8) I felt that I had greater control over my gambling after using the self-exclusion website	1	2	3	4	5
(9) Overall, I found the self-exclusion website to be a useful tool to help manage my gambling problem	1	2	3	4	5
Perceived ease of use					
(1) It was easy to navigate the self-exclusion website even when using it for the first time	1	2	3	4	5
(2) I felt comfortable using the self-exclusion website.	1	2	3	4	5
(3) The website instructions were clear and easy to follow	1	2	3	4	5
(4) I frequently made mistakes when using the self-exclusion website	1	2	3	4	5
(5) I felt frustrated when using the self-exclusion website	1	2	3	4	5
(6) I found it easy to recover from mistakes when using the self-exclusion website	1	2	3	4	5
(7) The self-exclusion website behaved in unexpected ways	1	2	3	4	5
(8) Using the self-exclusion website took a lot of mental effort	1	2	3	4	5
(9) I found it easy to get the self-exclusion website to do what I wanted it to do	1	2	3	4	5
Attitudes toward use					
(1) I would recommend the self-exclusion website to other gamblers	1	2	3	4	5

(2) I was satisfied with my overall experience of using the self-exclusion website	1	2	3	4	5
(3) I think that the self-exclusion website is better than traditional in-person self-exclusion	1	2	3	4	5
Behavioural intention					
(1) If available, I intend to use the self-exclusion website again in the future	1	2	3	4	5
(2) If available, I predict that I will use the self-exclusion again in the future	1	2	3	4	5
(3) In the future, I think that I would prefer to self-exclude in-person	1	2	3	4	5
Perceived Security					
(1) I feel confident that the security features of the website will keep my personal information safe	1	2	3	4	5
(2) I am concerned that using the self-exclusion website may jeopardise my privacy	1	2	3	4	5
Subjective Norms					
(1) I believe that most people who are close to me would approve of me using the self-exclusion website.	1	2	3	4	5
(2) I believe that most people who are close to me would have preferred that I self-exclude in-person and did NOT use this website.	1	2	3	4	5

D. Project Challenges

Table. Project risks register cumulated over three phases

No.	Risk	Management
1.	The web developers have indicated limitations to their expertise with specific aspects of the website build (e.g., data security, ID verification, certain design/ interactive requirements). Additionally, they have less available time to work on the project given the University COVID-19 transition to online teaching.	The current development team will build all core functionality into the alpha website version in preparation for usability testing. Additional requirements highlighted in phase two will be outsourced to other specialist services if they are beyond the technical expertise and/or time constraints of the current developers.
2.	Study participation rates have been negatively affected by COVID-19.	Recruitment invitations will initially be sent to a larger number of eligible participants (expecting 5-10% response rate). Up to two further follow-up emails will be sent to individuals who do not respond to the initial invitation. Broaden recruitment avenues (if preceding options are not sufficient).
3.	Issues transferring usability protocols to an online environment.	Research team to discuss the logistics of conducting the study via online video conferencing software (Zoom) and ensure that the impact on study quality is minimal to none. An ethics modification will need to be submitted to reflect any changes to the study protocol.
4.	Ensuring completion of the project by December 2020.	The final phase (3) of the study was intended to be a live pilot study of the self-exclusion website resulting in real-world self-exclusions. Study 3 will instead be conducted as a non-live pilot trial using current self-exclusion end users. This change will enable the project to be completed to schedule despite significant disruptions to progress due to COVID-19. Some loss to ecological validity is expected, however the primary outcome variable – acceptability – will not be affected.

<p>5. Very low response rates have been observed among the self-exclusion population both for the qualitative requirements and usability test recruitment. Initial invitations and reminders were sent to 397 eligible participants, 25 of these replied with interest but did not participate, 4 unsubscribed from the research mailing list, 10 participated in the usability testing ($10/397 = 2.5\%$ response rate). Whilst this is a known limitation of conducting research with this specific population, the disruptive impact of COVID-19 has undoubtedly played a cumulative role in reducing these rates even further than expected.</p>	<p>Similar measures that were used to enhance recruitment in phase 2 (e.g., two follow-up email invitations, personal telephone contact) will also be used for phase 3. Participation requirements are less intensive for the phase 3 acceptability study (less time involved, online survey, can be completed at any time, no direct contact with researchers). Therefore, we anticipate that response rates will be higher relative to phases 1 and 2.</p>
<p>6. Protocol modifications submitted to the University Human Ethics and Research Committee were delayed for a period of 6 weeks. During this time, the online University ethics system was undergoing a rebuild. Procedures for manual submission of ethics applications had not been devised at the time. Consequently, phase 2 data collection was deferred until the approval was granted.</p>	<p>We requested for our modification application to be processed manually for ethical review, including frequently liaising with the University Research Support team to ensure this occurred expeditiously. Adjustments required for the phase 3 protocol (i.e., to include repeated participation reminders) were incorporated into the previous modification submission. Thus, we do not expect to need any further protocol modifications.</p>
<p>7. Limited time to implement all website upgrades identified during the research phases. The usability testing was particularly successful in that it revealed a multitude of novel ideas and refinements to enhance the end user experience. We expect a similar result from the acceptability study. Unfortunately, due to project deadlines and budgetary constraints, we do not have sufficient time, and in some cases, requisite specialised skills, to enact all web development items.</p>	<p>Web development items identified by the usability and acceptability analysis will be prioritised according to their degree of importance (i.e., how many times was it mentioned? How much emphasis did participants place on the item?) and feasibility (i.e., how easy/difficult is the item to implement? How long will it take? Can it be completed by the current team?). Clear recommendations for uncompleted or optional development items will be provided in the final research report.</p>

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