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Evaluating the acceptability of the Drink Less app and the NHS alcohol advice webpage: A qualitative interviews process evaluation

Melissa Oldham, Larisa Dinu, Gemma Loebenberg, Olga Perski, Jamie Brown, Colin Angus, Emma Beard, Robyn Burton, Matt Field, Felix Greaves, Matthew Hickman, Eileen Kaner, Susan Michie, Marcus R Munafò, Elena Pizzo, Claire Garnett

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Preprint JMIR Publications

Abstract

Background: The extent to which interventions are perceived as acceptable to users impacts engagement and efficacy.

Objective: Here, we evaluate the acceptability of i) the smartphone app, Drink Less (intervention), and ii) the NHS alcohol advice webpage (usual digital care and comparator), among adult drinkers in the UK participating in a randomised control trial evaluating the effectiveness of the Drink Less app.

Methods: A sub-sample of 26 increasing-and-higher-risk drinkers (AUDIT? 8), assigned to the intervention group (Drink Less, n=14) or usual digital care (NHS alcohol advice webpage, n=12) group took part in semi-structured interviews. The interview questions were mapped on to the seven facets of acceptability according to the Theoretical Framework of Acceptability (TFA); affective attitude, burden, perceived effectiveness, ethicality, intervention coherence, opportunity costs, and self-efficacy. Alongside these constructs we also included a question on perceived personal relevance, which previous research has linked to acceptability and engagement. Framework and thematic analysis of data was undertaken.

Results: The Drink Less app was perceived as being ethical, easy, user-friendly and effective for the period the app was used. Participants reported particularly liking the tracking and feedback sections of the app which they reported increased personal relevance and which resulted in positive affect when achieving their goals. They reported no opportunity cost. Factors such as negative affect when not meeting goals and boredom led to disengagement in the longer term for some participants. The NHS alcohol advice webpage was rated as being easy and user-friendly with no opportunity costs. However, the information presented was not perceived as bring personally relevant, or effective in changing drinking behaviour. Most reported neutral or negative affect and whilst most thought the alcohol advice webpage was accessible, some reported ethical concerns around availability of suggested resources. Some participants reported that it had acted as a starting point or a signpost to other resources. Participants in both groups discussed motivation to change and contextual factors such as COVID-19 lockdowns which influenced their

perceived self-efficacy regardless of their assigned intervention.

Conclusions: Drink Less appears to be an acceptable digital intervention among the recruited sample. The NHS alcohol advice webpage was generally considered to be unacceptable as a standalone intervention amongst the recruited sample, although it may signpost and help people access other resources and interventions. Clinical Trial: ISRCTN64052601

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Abstract

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Methods: A sub-sample of 26 increasing-and-higher-risk drinkers (AUDIT≥ 8), assigned to the intervention group (Drink Less, n=14, 71% female, aged 22-72, 64% white) or usual digital care (NHS alcohol advice webpage, n=12, 42% female, aged 23-68, 75% white) group took part in semi-structured interviews. The interview questions were mapped on to the seven facets of acceptability according to the Theoretical Framework of Acceptability (TFA); *affective attitude, burden, perceived effectiveness, ethicality, intervention coherence, opportunity costs, and self-efficacy*. Alongside these constructs we also included a question on *perceived personal relevance*, which previous research has linked to acceptability and engagement. Framework and thematic analysis of data was undertaken.

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Conclusion: Drink Less appears to be an acceptable digital intervention among the recruited sample. The NHS alcohol advice webpage was generally considered to be unacceptable as a standalone intervention amongst the recruited sample, although it may signpost and help people access other resources and interventions.

Introduction

Drinking alcohol at increasing-and-higher-risk levels is a major public health concern and contributes to health inequalities with the most deprived groups suffering the most harm from alcohol[1]. Fewer than 7% of increasing-and-higher-risk drinkers who visited their GP in the last year, received face-to-face interventions in primary care to support alcohol reduction[2]. Key barriers to the delivery of these interventions by practitioners are lack of time, low confidence about discussing alcohol with patients and lack of training[3]–[5]. Digital interventions, such as websites, are effective for reducing alcohol consumption compared with no intervention or minimal input controls[6]. They may overcome delivery barriers as they potentially have a broad reach and relatively low implementation costs (once developed), so can be delivered at scale[7]. Smartphone apps are a promising type of digital intervention as smartphones have become increasingly affordable to end users and prevalent among the UK population[8]. However, despite the availability of hundreds of alcohol-related apps on commercial app stores, the majority have been developed without reference to scientific evidence or theory[9]. Furthermore, few have undergone evaluation in terms of their acceptability, engagement or effectiveness[6]. It is critical to establish whether digital interventions are acceptable to end users, as acceptability impacts on engagement and effectiveness[10]. Furthermore, acceptability can be used to promote use by Public Health practitioners and policy makers.

The extent to which interventions are perceived as 'acceptable' to users, and to other stakeholders such as family members, healthcare professionals and policy makers affects engagement and effectiveness[10]. Acceptability sits at the core of the Technology Acceptance Model[11], which states that perceived ease of use and perceived usefulness of a given technology positively influences usage intentions. Most definitions of acceptability in digital health research primarily capture how people think and feel about a given technology[12], [13], an example being "an emergent property, or a 'gut feeling', arising from a dynamic, complex system of emotional and cognitive components"[14]. The theoretical framework of acceptability (TFA) defines acceptability as a multi-faceted construct reflecting the extent to which a healthcare intervention is considered to be appropriate, based on anticipated or experienced emotional and cognitive responses to the intervention[12]. Acceptability, according to the TFA, consists of seven facets: affective attitude, burden, perceived effectiveness, ethicality, intervention coherence, opportunity costs, and self-efficacy. In addition to the facets outlined by the TFA, the extent to which an intervention is perceived as being personally relevant and tailored to the individual could be of importance when thinking about acceptability[15] and has shown to be linked to engagement[16].

Drink Less is a theory- and evidence-informed app-based intervention designed by researchers[17] to help people reduce their alcohol consumption. This study examines the acceptability of Drink Less and the NHS alcohol advice webpage[18], to adults drinking at increasing-and-higher-risk levels in the UK following their participation in a randomised controlled trial (RCT) evaluating the effectiveness of the Drink Less app[19] compared with usual digital care (e.g. NHS alcohol advice webpage[18]). It aims to assess participants' views on the acceptability of the Drink Less smartphone app and of the NHS alcohol advice webpage.

Methods

Ethical Considerations

Ethical approval was obtained from University College London (UCL) Research Ethics Committee [16799/001]. All participants provided informed consent before participating in the study. Data was anonymised and securely stored. All study participants were renumerated with a £20 Amazon voucher to thank them for their time.

The Drink Less app

The development of Drink Less was informed by research findings and behavioural theories such as the COM-B (Capability Opportunity Motivation – Behaviour) model of behaviour change[20]. Drink Less consists of evidence-based modules to help users change their drinking behaviour: Goal Setting (setting weekly 'drinking reduction' goals); Self-Monitoring and Feedback (monitoring alcohol consumption and seeing progress on goals); Action Planning (creating plans for dealing with difficult drinking situations); Normative Feedback (providing personalised feedback on how an individual's drinking behaviour compares with the norm); Cognitive Bias Re-Training (a game for retraining users' automatic biases for alcoholic drinks); Insights (providing users with a running total of their drinking and weekly/monthly feedback); Behavioural Substitution (planning to substitute drinking with a neutral behaviour); and Information about Antecedents (providing users with information about situations and events, emotions and cognitions that predict their drinking[21]).

NHS alcohol advice webpage

The webpage is freely accessible and appears in the top Google searches for "alcohol reduction advice" and "how to drink less alcohol" in the UK. The webpage contains tips for cutting down on alcohol consumption such as planning, setting a budget and switching to smaller or weaker strength drinks. This is presented alongside information on a number of benefits for cutting down for physical and mental health including; weight loss, and improvements in mood and sleep[18]. The webpage also has links to other webpages including 'alcohol support' and 'the risks of drinking too much'.

Study data

This study analyses data collected within the iDEAS trial, a large-scale RCT[19] evaluating the effectiveness and cost-effectiveness of recommending the Drink Less app, compared with usual digital care (the NHS alcohol advice webpage) in the UK with an embedded mixed-methods process evaluation. This study reports the analysis of the qualitative interviews assessing the acceptability of the interventions.

Participants were eligible for the iDEAS trial if they were aged 18 years or over, lived in the UK, were increasing-and-higher-risk drinkers (Alcohol Use Disorders Identification Test (AUDIT) score>=8), had access to an iOS device (i.e., iPhone, iPod touch or iPad), and wanted to drink less alcohol. Recruitment ran from July 2020 to March 2022 with the final follow-up collected in October 2022. Recruitment occurred via a multi-pronged strategy including: an advertisement on the NHS website; targeted and untargeted social media, radio advertising, a mail-out to a database of UK-based users of the Smoke Free app, and local advertising through health care providers.

When participants signed up to the iDEAS trial, they provided informed consent to participate in three online follow up surveys after one, three and six months. They were given the option to also consent to be contacted for a follow-up interview. Participants were then asked again at their 6-month follow-up whether they would be happy to be contacted for a follow-up interview about their experience of using the intervention.

Participants

Participants were selected from the group who consented at either baseline or 6-month follow-up to an interview. We identified participants purposively to interview roughly equal groups of men and women, those on low and high incomes, and from a range of ages and ethnic backgrounds. This was to ensure that the views of a diverse group of participants were represented. Researchers also purposively sampled to include people with a range of app engagement levels to avoid recruiting only highly engaged participants who may have felt more positively about the intervention. For those in the Drink Less group, engagement data were used to determine whether they had low (defined as 1-2 recorded sessions), medium (3-27 sessions) or high (28+ sessions) engagement with the app. Participants were asked if they used the intervention at their 1- and 6-month follow-up survey and this data was used to ensure that different levels of engagement within the comparator group (e.g., never used versus used) was captured. When sampling, researchers filtered the data based on

demographic and engagement criteria and the first person meeting the required criteria was invited. To include views of those who may have been less engaged in the study, those who provided consent to interview at baseline to participate in the interview but did not complete the 6-month follow-up were invited to participate.
The final sample was n = 26 (n = 14 from the Drink Less group and n = 12 from the NHS alcohol advice webpage (comparator) group). Recruitment ceased when 'meaning saturation' had been reached, and no further nuances, or insights were found[22]. No new codes were identified in later interviews which differed from those identified in the earlier interviews. Nor did the later interviews change the meaning of any codes or themes.

Epistemological Position

We adopted a realist epistemology assuming that our understanding of each participants reality is shaped through their perception of that reality, which are further interpreted by the researcher. The realist/essentialist epistemology assumes that meaning and experience are reflected in language[23]. This epistemology fitted our research aim of exploring acceptability judgements for the two interventions.

Procedure

In line with previous conceptualisations of acceptability[14], the interview topic guide (Appendix 1) was designed to first measure an individual's gut feeling about the intervention they received (using a five star rating system) before exploring the seven component facets according to the TFA[12]: affective attitude, burden, perceived effectiveness, ethicality, intervention coherence, opportunity costs, and self-efficacy (see Table 2 for definitions) and perceived personal relevance[16]. Given that trial architecture (e.g., randomisation, follow-up) can be conflated with perceptions of acceptability of the studied intervention[24], we asked participants to reflect on each separately.
We consulted a Public and Patient Involvement (PPI) group to ensure that the questions were clear for participants to answer. PPI feedback was that the ethicality question "How fair did you think the intervention was to all possible users?" would be difficult to answer and the suggested alternative wording was "Do you think anyone could use this intervention?". Participants also suggested that the burden question which originally read "How difficult did you find it to use the intervention?" was split out into two questions focusing on how time consuming the app was and whether there were any other difficulties. Both suggested changes were implemented.
Once selected, participants were emailed and invited to attend a one-to-one semi-structured interview. Interviews were conducted within two months of participants finishing their final follow-up survey. Twenty-four of the interviews took place using video conferencing software and two took place on the phone (participants preference). At the start of the interview, the researcher confirmed consent. The interview focused on perceptions of the acceptability of the interventions. The interview was led by the topic guide, exploring each facet of acceptability in turn. After each question, the interviewer prompted participants to expand on their answers or asked relevant follow-up questions to ensure that participants fully expressed their views. All interviewers conducted at least one pilot interview. Interviews were recorded using a Dictaphone. They took between 12-34 minutes to complete. See Appendix 2 for the consolidated criteria for reporting qualitative research (COREQ) [25].

Research Team and Reflexivity

Personal characteristics of interviewers: There were three interviewers. MO is a female senior research fellow at UCL and has a PhD in Health Psychology. She is predominantly a quantitative researcher but undertook qualitative interviewing training in advance of the interviews. LD is a female research assistant at UCL and has a MSc in Psychiatric Research. She has experience in conducting interviews remotely and has undertaken training sessions in qualitative research. GL is a

female research fellow (trial manager) at UCL and has an MSc in Developmental and Educational Psychology. She has experience undertaking qualitative interviews and conducting interviews remotely by phone.

Relationship with participants and to topic: All interviewers had little contact with participants pre-interview, save for reminder emails at 1-, 3- and 6-months. Interviewers may potentially also have made up to two reminder phone calls and sent a postcard and a letter at the 6-month follow-up. Participants may have had some knowledge of the interviewers and their roles within UCL and the trial team through study documentation. The goals of the research, to understand the acceptability of the digital intervention used, were explained to participants at the start of the interview. All three interviewers were blind to the outcome data at the time of the interviews.

Reflections on interview process: The three interviewers thought that their demographic characteristics did not seem to impact on the interview process. Participants seemed able to speak openly about their positive and negative experiences of using the app and webpage. However, there are two points of interest. First, when participants reported negative points about the NHS alcohol advice webpage, they often prefaced these comments by talking very positively about the NHS more generally. Second, in both groups, some participants apologised to the interviewer before reporting a negative experience or saying something they didn't like about the webpage or app. These points could suggest that participants experienced some social desirability bias, and thought that the interviewers wanted them to report positive experiences.

Analysis

Interviews were transcribed verbatim, anonymised and then uploaded into NVivo 12 for coding and analysis. We followed a combined inductive and deductive approach. An initial coding framework was developed using a priori themes (e.g., TFA facets and perceived personal relevance). Two researchers (MO and LD) coded the first five interviews separately and then an iterative process of crosschecking coding strategies and data interpretation was carried out to establish a consensus and develop a revised coding frame. Coding was further refined using an ongoing comparative method, whereby each interpretation and finding was compared with existing findings, as more transcripts were analysed. Following initial coding, similar responses within each construct were inductively analysed to generate content themes[23] representing how that construct contributed to reported acceptability. Participant quotes are presented alongside the gender and sex of the respondents. Where duplicated, a letter has been added to age.

Following analysis, a draft of the results section of this report was shared with a subsample of eight randomly selected participants (four from each group). Participants were asked to comment on how well the relevant results section summarised their views on the acceptability of the digital tool and whether there were key points they thought that were missing from this summary. Participants largely thought that the results accurately represented their experiences and no changes were made. Feedback is presented in Appendix 3.

Results

Participant Characteristics

Of 5602 trial participants, 4443 participants consented to the interview at baseline or 6-month follow-up. Fifty-five people were invited to interview, 29 declined or did not respond, resulting in a final sample of n=26. See Table 1 for an overview of participant characteristics overall and by group.

Table 1: Participant characteristics overall and by group

	Drink Less (n =	NHS alcohol advice	All (n = 26)

	14)	webpage (n = 12)	
% Female (n)	71%[1] (10)	42%[2] (5)	58% (15)
Age [m (range)]	41.64 (22-72)	43.50 (23-68)	42.50 (22-72)
Ethnicity			
% Asian (n)	7% (1)	0% (0)	4% (1)
% Black (n)	7% (1)	8% (1)	8% (2)
% Mixed Race (n)	14% (2)	8% (1)	12% (3)
% White (n)	64% (9)	75% (9)	69% (18)
% Other (n)	7% (1)	8% (1)	8% (2)
% Higher Income[3]	71% (10)	67% (8)	69% (18)
Engagement			
% low (n)	14% (2)[4]	-	-
% moderate (n)	36% (5)	-	-
% high (n)	50 % (7)	-	-
Ever Used (n)	-	83% (10)	-
Not Used[6] (n)	-	17% (2)[5]	-
Global Acceptability[m(range)][7]	3.86 (2-5)	2.72 (1-5)	

[1]Proportion of Drink Less group
[2]Proportion of NHS alcohol advice webpage group
[3]Earning more than £26,000
[4]Originally categorised as non-users of the app based on engagement data but self-reported briefly using app in interviews, may not have provided accurate linking data between app and trial so categorised as low engagement here
[5]Reported never using the NHS alcohol advice webpage at six months but reported looking at it briefly at the start of the trial in the interviews.
[6]Reported never using at 1- or 6-month follow-up
[7]Participants were asked to judge the global acceptability of the intervention on a scale of 1-5 stars

A definition of and an overview of themes is presented in Table 2 for both groups.

Table 2: Definition and overview of themes

Theme	Definition of facet	Drink Less app	NHS alcohol advice webpage
Affective Attitude	How an individual feels about the intervention	Generally liked the app, particularly the drinking diary. Felt proud and happy when meeting goals. Some negative affect when failing to meet goals.	Most reported neutral or negative affect. Some felt that the webpage was patronising.
Burden	The perceived amount of effort necessary to use intervention	Quick and easy to use. Could tailor time spent based on time available or support required. Repetitive in the longer term.	Quick and easy to use. Some framed this as a negative, thought the webpage was too basic.
Ethicality	The extent to which the intervention has	Generally accessible.	Generally accessible.

	a good fit with an individual's value system.	Mixed views on whether app would work for those who had less experience of digital tools.	Concerns around availability of treatment through the NHS as recommended on the webpage and confidentiality of revealing drinking to healthcare professionals.
Intervention Coherence	The extent to which the participant understands the intervention and how it works.	App generally considered to be intuitive. Some reported a learning curve or difficulties with features. Participants reported understanding many of the mechanisms of change (e.g., tracking, goal setting).	Easy to use and navigate.
Opportunity Costs	The extent to which benefits, profits or values must be given up to engage with the intervention	Most reported no opportunity costs. Some thought that reducing drinking impacted on social life. Others reported reducing lone drinking rather than social drinking which they felt would have been more of an opportunity cost.	No opportunity costs.
Perceived Effectiveness	The extent to which the intervention is perceived as likely to achieve its aim.	Most thought the app helped them reduce their drinking for the time that they used it. Some contextual factors were a barrier to change (e.g., COVID-19) Disengagement from the app in the longer term.	Most thought that the webpage did not directly help them to reduce their drinking. Some found it helpful as a signposting tool to other resources.
Perceived Personal Relevance[1]	The extent to which the intervention is suited to the participants individual needs.	Highlighted the tailored tool-box nature of the tool – could pick the features they liked. Remote nature did not suit some, but some liked the anonymity.	Many thought they already knew the information and it was too generic. Participants reported that the webpage might be helpful for 'other people' but not personally suited to them.
Self-Efficacy	The participants confidence that they can perform the behaviours required	Mixed confidence in whether the app would work for them. Trust and confidence	Mixed confidence in whether the webpage would work for them.

	to participate in the intervention.	associated with UCL branding. Importance of personal motivation.	Importance of personal motivation.

[1]Not a facet of the TFA

Drink Less app

Affective Attitude

Participants generally liked the Drink Less app. They reported particularly liking the tracking component (Self-monitoring and Feedback) and the traffic light colour coded feedback on the calendar for alcohol-free, light and heavy drinking days.

> *"I quite liked the little graph that shows whether you're on track" [FEMALE, 60]*
> *"I liked the fact that it was nice and visual so the calendar, where it came up with red, green or amber I found that quite useful for me" [FEMALE, 38a]*

Participants reported feeling positive and proud when they were meeting their goals to reduce their consumption.

> *"I was encouraged by the calendar where you have the days when you don't drink, and having it consistently green week after week, it made me feel nice and I wanted to continue doing that." [MALE, 41]*

> *"I did like the fact that if I logged on that I hadn't drank it sort of praised me" [FEMALE, 55]*

A few participants reported negative affect when recording heavy drinking or when they were relapsing or failing to meet their goals. They reported not liking having a visual account of their failure.

> *"I didn't want to visually see my mistakes on my phone and yeah I think judgment on myself as well" [FEMALE, 26A]*
> *"when you do start going backwards and drinking more and more than you know you're all you're doing is sort of putting effectively negative data into the app. And you just feel like you've let yourself down, you've let the app down and you've let your progress down" [MALE, 22]*

Burden

Participants generally reported that the app was not time consuming to use and that they found it quite easy and user friendly.

> *"it is easy to use, it's quick it's not onerous" [FEMALE, 47]*

Some participants talked about spending more or less time on the app based on the level of support they felt they needed each day or the amount of time they had available.

> *"I could spend over an hour going through it and making a plan and you know for that if I thought I needed the extra support and other days it just took five minutes, maybe 10 to just log in you know what was happening" [FEMALE, 67]*

> *"Other times I'm kind of free, so I don't see maybe I'm not doing anything I'm just bored or something like that and I start using the app… so sometimes time consuming sometimes not." [MALE, 30B]*

In the longer term, using the app was described by some as repetitive. Over time this led to negative emotion or forgetting and eventually disengagement.

> "*as it went on I found it a bit of a chore and kind of forgot about it*" [FEMALE, 26A]
> *"I was using it a lot at first. But then I sort of kind of lost interest in the app."* [MALE, 22]

Ethicality

This theme is focused on fairness and accessibility. Participants reported thinking that the app was accessible for most people who had access to a smartphone.

> "*anyone who's got a smartphone and uses Apps can use it, but that isn't you know, obviously that isn't everyone."* [FEMALE, 47]

Participants felt that in order to be fair to all users, the app should be accessible to everybody. Some participants highlighted that those who were older or less technically able might struggle to use Drink Less. Others thought it was already broadly accessible.

> *"I'm sure anybody can use it, but it needs to be a bit simplified if you want people who are less tech-savvy to use it"* [MALE, 41]
> *"I'm sort of thinking about my mom who isn't very tech minded I think if If the app was downloaded for her and she had a tablet…she'd still be able to use it as well, so yeah it's easy to use for anybody I would think."* [FEMALE, 55]

Intervention Coherence

Most said that the app was intuitive.

> *"I didn't have any problem with it, was very usable all the labels and options, they were all self-explanatory." [MALE, 30A]*
> *"it was easy to download and easy to just get up set up and start using" [FEMALE, 55]*

Though some participants reported a learning curve when they first started using the app. Others reported specific issues with using different features of the app such as logging cocktails which there was not a default option for, entering the cost of drinks and customising goals.

> *"in the beginning…I was a bit overwhelmed, what am I supposed to do now? Am I supposed to do this game or do that. But over time I realised that, first of all, you don't have to do any of them, it will still work." [MALE, 41]*
> *"the one thing that I just found a bit confusing was like, if I had a drink and I didn't know how to record it because yeah there wasn't an option for some things." [FEMALE, 25]*

Participants seemed to be aware of some of the underlying behaviour change components through which the app worked. Participants commented on the importance of tracking in highlighting how much they drank and reported that the praise and the traffic light function in the calendar

encouraged them to have more alcohol-free days. Others commented on reflecting on the effect that alcohol had on their mood and sleep and said the app dispelled myths around alcohol helping them to sleep or relax.

> *"I was encouraged by the calendar where you have the days when you don't drink, and having it consistently green week after week"* [MALE, 41]
> *"even if I wasn't putting it into the app I was aware or reminded of the numbers of units per week that are heal- that's healthy. And having you know, a glass just a glass of wine on a random night adds to that total and it's unnecessary" [FEMALE, 47]*

> *"people always assume, or I'd always assumed, you have a drink and it helps you sleep but actually it really doesn't so I've been able to just.. think about that a little bit more" [FEMALE, 38]*

Opportunity Costs

Most participants said the Drink Less app fit in to their lifestyle and did not interfere with other obligations.

> "*you know if I couldn't do it that day, I could always try and do it the next day or anything like that or just not do it at all.*" [FEMALE, 25]
> "*I'm really busy. I've got young children and a full time job and all the rest of it, and it was it was something that I have no problem incorporating into my routine"* [FEMALE, 38A]

Some participants suggested that the using the app to cut down on their drinking had indirect opportunity costs by interfering with their social life as they did not want to go over their goals.

> *"I was like I only have four units left and like weekend is when I usually drink or like meet friends and things like that so yeah it was a it was a little bit like, I was kind of losing every week in a way." [MALE, 30A]*

Other people talked about how their use of the app did not impact on their ability to socialise in drinking settings and how they used it more to cut out lone drinking or 'mindless drinking'.

> "*I think it made me more conscious of erm having the odd drink here and there…I can't say it helped me with my drinking if I was out socializing in the pub.*" [FEMALE, 55]
> *"if I'm going out with or with friends I will still drink, what it knocked on the head is the having a glass of wine while I'm cooking dinner for no particular reason drinking."* [FEMALE, 47]

Perceived Effectiveness

Most participants thought the app helped them drink less for the time that they used it and described different strategies of using the app to successfully cut down their consumption. These included: accurately monitoring units consumed with reference to the drinking guidelines, downsizing, cutting out habitual drinking and aiming for more alcohol-free days.

> *"overall, I do think it helped me for that time, I think the other helpful thing was also just to like see in my life like what 14 units really looks like and how small It is" [MALE, 30A]*

"I've not cut the days I drink back, but I instead of buying a whole bottle of wine, I buy a small bottle of wine." [FEMALE, 72]

"When you see how many alcohol units you're using per week, or you're drinking per week it yeah it just kind of reset my drinking and it has knocked on the head the mindless drinking" [FEMALE, 47]

Not all participants thought the app helped them drink less. Some described contextual barriers to them drinking less such as COVID-19 and Christmas. Other participants described disengaging from the app and returning to heavier drinking in the longer term.

"perhaps, if I hadn't started at Christmas maybe or if the situation would have been different, then maybe I would have taken more notice of it." [FEMALE, 60]
"I used it religiously for a while and then and then after that it is hard once you drop off again like I said when you go backwards it's hard to then go back on it and start again you just can't be bothered like and frankly it's like it's really hard to find the energy to like start afresh." [MALE, 22]

Participants had some suggestions of how to make the app more effective for them in the longer term which included changing the features of the app more frequently and using the app in group or healthcare settings.

"perhaps a weekly zoom meeting with 20 people that are using the app to see how people are getting on there's no shame and you can sort of just say okay well okay you've you've taken a step back, but it's fine input your data, the next day, and the next day, and this is how to actually come back" [MALE, 22]

Perceived Personal Relevance

Most participants reported that the app was a good fit for them. The app was commonly perceived like a toolbox with different intervention components available to select. People reported using the app in different ways and finding the components of the app that worked best for them. For others the remote nature of the app and the anonymity that offered was a good fit for them.

"the good thing about it is that it has various tools and games and I am sure that not every one of these functions will appeal to every single user, so from my perspective, having a supermarket function was very useful." [MALE, 41]
"I wasn't in a position to go to the doctor and didn't feel like seeing someone in person, so the app was a personal way of getting support anonymously" [MALE, 41]

Not everyone felt that the app was a good fit for them, some participants reported needing more support or not liking the digital and remote nature.

"I don't think that the just reading things on the screen was something that appealed to me, personally, but may appeal to others." [FEMALE, 60]

Perceived Self Efficacy

Participants reported mixed levels of confidence in whether the app would work for them.

"I was very confident it would work out for me." [MALE, 30B]

> *"I wasn't particularly confident because I didn't know what it was and how it would you know run run out and how I could use it and what other things were in it"* [FEMALE, 67]

Participants reported having confidence and trust in the app based on its association with University College London (UCL).

> *"I felt confident, I thought you know it's by UCL, I am sure its trustworthy so yeah, I was confident" [FEMALE, 25]*
>
> *"Confident another way, I suppose I trusted it. I believe what it was telling me… I suppose I assumed by that that there'd been accurate research by the people that had developed the app"* [FEMALE, 55]

Participants reflected on the importance of their own motivation to change their behaviour and how this determined whether they were confident in the Drink Less app.

> *"Now, can it help me now? I don't think so because I don't have the same motivation as in February when I started"* [MALE, 41]
>
> *"I think say someone I knew had a problem, and they were ready to really address it and sort it out I'd recommend it to them. Just to give it a go but. I just don't think maybe I'm not there yet ready I don't know, maybe in the future it be helpful."* [FEMALE, 26A]

NHS alcohol advice webpage

Affective Attitude

Participants generally reported neutral or negative affect when discussing the NHS alcohol advice webpage. Some reported finding it basic and patronising.

> *"the website itself was fine it was okay I liked it no kind of bad feelings about the actual website or kind of irritations or anything."* [FEMALE, 40]
>
> *"more like er a nagging er nagging grandmother" [MALE, 68]*
>
> *"I found it vaguely informative, but a lot of it was just common sense, so in a way, in a way, some of it felt almost like a little bit patronising." [MALE, 30]*

Burden

The NHS alcohol advice webpage was generally considered to be very easy and quick to use.

> *"very easy to read and clear and concise"* [MALE, 30]

However, this was also framed as a negative of the webpage. Some said they only used the webpage briefly as the information contained was basic. Others suggested that the lack of change or interactive features meant that they did not return to the webpage.

> *"very, very sparse"* [MALE, 42]
>
> *"I mean you know it was only a few visits to it so um you know after that you you're not going to gain any more from it"* [MALE, 68]

Ethicality

Participants reported thinking that the NHS alcohol advice webpage was accessible for most people who had access to the internet.

> *"anyone who can use internet could use the website" [MALE, 42]*

"I feel like it's very accessible to all, especially in this day and age" [MALE, 23]

There was a range of concerns about the treatments offered by the NHS and concerns around negative consequences if they honestly reported their alcohol consumption to a healthcare professional.

"the help that they suggest is available isn't always available easily" [FEMALE, 55A]

"I don't think there's enough done to help people with it [alcohol dependence] in all honesty I think it's just a case of people get stuck in some sort of rehab which is generally lumped into some sort of mental welfare ward" [MALE, 36]
"I was worried about driving lessons been taken away about social services, because I had a child things like that… if there was in the early days, some kind of reassurance that you could you know get a certain amount of help, without any repercussions then people would actually take part in the options that are available and suggested." [FEMALE, 40]

Intervention Coherence
Participants reported confidence in navigating the NHS alcohol advice webpage, the titles were clear and it was easy to use.

"it was very clear and everything's labelled nicely and kind of navigating the website is very, very simple" [MALE, 23]
"I felt I could use it pretty instinctively." [FEMALE, 26]

Opportunity Costs
No participants reported that the NHS alcohol advice webpage had interfered with anything else important in their life.

"it wouldn't be something that I'd look at instead of day to day life" [MALE, 23]

Perceived Effectiveness
Participants reported that while the NHS alcohol advice webpage did not directly affect their drinking, they thought they would have benefited from more of a call to action.

It's all good and well telling me all these facts and giving me information about how to deal with drinking and what it can do to you but really it's not enough. [MALE, 23]

"I sometimes wonder if they should be a bit harsher but you know like this is the consequences or something you know" [FEMALE, 55A]

"there was nothing in the NHS incentivised you to say oh right okay, but basically it was just basically textbook stuff on the internet" [MALE, 68]

For some it served as a first step signposting to other resources or motivating them to independently search for other resources.

"it started me on the journey and it pointed me in the right direction" [FEMALE, 44]

"at least it made me look at other things, and eventually identify, something that was really

helpful" [FEMALE, 61]

Perceived Personal Relevance

Many participants reported feeling like the NHS alcohol advice webpage was not relevant for them. They thought that the information presented was too generic and would benefit from more tailored components.

> *"for my my individual needs for what it was, I didn't think it was that well suited to compared to like I said if there'd been something a little bit more tailored." [MALE, 30]*

> *"a kind of screening tool at that point might have been helpful to then identify people with moderate alcohol problems to severe alcohol problems. And then you could then guide them or direct them to a more appropriate channel rather than treat everybody the same whether they drink five bottles of spirits a day or two glasses of wine" [FEMALE, 61]*

Many participants talked about the NHS alcohol advice webpage perhaps being a good fit for other people and acknowledged the need for the webpage to be quite generic given its purpose was to serve a varied group of people.

> *"It might have served other types of persons needs but not mine. Perhaps I wanted too much from it, perhaps I wanted something too individual"* [FEMALE, 61]

> *"it was good and informative but quite generic. You know, which is suppose it has to be if a lot of people are using it" [FEMALE, 26]*
> *"But because of what it is designed to be for the NHS I suppose it needs to be that way because it'll have people who sort of drinking a bottle of vodka a day to someone who they thought I might give it a Google because, last night I hit it a little bit too hard*." [MALE, 30]

Perceived Self Efficacy

Participants reported mixed levels of confidence in using the NHS alcohol advice webpage to reduce their drinking.

> *"I don't have a lot of faith in the NHS, as much as I love the NHS, I don't have a lot of faith in the help that's available for this type of thing." [FEMALE 55a]*

> *"it's NHS so it's recognisable and you feel comfortable using it, because it's trusted source"* [MALE, 23]

As in the Drink Less group, participants highlighted the importance of their own motivation to change.

> *"I think that the study came at a really good time for me, that time that I was ready to face up to the fact that I needed help, and I wanted to be accountable as well" [FEMALE, 44]*

Discussion

Participants reported liking the Drink Less app, they particularly liked the tracking and feedback components which they considered made the app more personally relevant to them and felt proud and positive when they were meeting their goals. They discussed that the app functioned as a 'supermarket' or toolbox whereby they could choose and use the components of the app that worked best for them. Participants reported different strategies and goals and most thought that the app was effective in reducing their alcohol consumption, particularly in the shorter term. This 'supermarket' function extended to depth of use, participants also reported that use was influenced by the level of support they felt they needed that day - this could include spending more time on the app making plans and behavioural substitutions when their cravings were higher. Participants reported being confident in using the app, and that it was intuitive and accessible. Although, some thought that there was a learning curve at the start of using the app and some participants reported specific difficulties in using the app such as logging cocktails (which are not included as default options in the drinking diary) or customising goals. Some participants reported negative affect when logging heavier drinking days or failing to achieve their goals, which led to disengagement in the longer term. Another factor reported as leading to disengagement was boredom. Some participants reported that though the app was not burdensome to use, it became something of a chore.

Participants reported that the NHS alcohol advice webpage was very quick, easy and intuitive to use and accessible to anyone with internet access. Participants reported that the webpage could be a useful tool for other people, but they judged that the information contained was less personally relevant to them, and the webpage was described as being basic and generic. Some found that the webpage had provided the starting point for them in reducing their alcohol consumption by signposting them to other tools or resources whereas others thought it had not had an impact on their alcohol consumption. There were concerns raised by participants about contacting a healthcare professional as some thought this would be ineffective and were not confident that the services would be available. Participants suggested that the webpage could benefit from having some more personalised features such as signposting for different levels of consumption.

We have avoided drawing comparisons between the two tools throughout this analysis because the nature of the two tools is different. The trial may have set up the evaluation of the acceptability of the tools to encourage participants to think of the NHS alcohol advice webpage as a standalone or prolonged intervention. Whereas, unlike the Drink Less app, the alcohol advice webpage focuses on information provision and does not offer opportunities for personalisation or engagement.

These data are consistent with work highlighting the importance of perceived personal relevance[15], [16] and a recent evaluation of an app designed to help ex-service personnel reduce their drinking that highlighted credibility, ease of use and personalisation as important functions of the app[26].

Although participants perceived the app as potentially effective in helping them reduce their alcohol consumption in the shorter-term, participants described some factors, such as repetition and negative affect, which they felt led to their disengagement from the app in the longer term. Achieving prolonged engagement with digital interventions[27] and apps more widely[28] is a known challenge. Participants had some ideas, such as new features or group use, that could have boosted their engagement in the longer term. These findings suggest that the Drink Less app should be viewed as a dynamic intervention that new evidence-informed components and features could be added to. This does raise practical issues as the app is currently managed by an academic research team with limited resources available for ongoing management and development costs. One implication of this research is therefore to consider how academics and third sector partners can work together to continue to develop and maintain digital interventions with evidence of effectiveness and acceptability to end users.

Amongst this sample Drink Less seems to be an acceptable intervention. However, the generalisability of these findings should be considered and digital exclusion[29] is an important factor to consider when promoting digital interventions. Some people may be unable to access devices or data, or be unable to make the most of them due to lack of knowledge or resources or are

less likely to engage with them[29]. Digital exclusion is more likely in vulnerable populations including older people, those out of work, the most financially vulnerable, and those who live with a condition that limits or impairs their use of communication services. Therefore, researchers and policymakers should be aware of how the introduction of digital interventions could impact on widening inequalities as digital interventions such as smartphone apps are not going to be accessible and acceptable for everyone. Metrics of variation across different protected characteristics should be measured in the roll out of all digital public health tools and explored in process work.

The topic guide was developed in collaboration with experts by experience to ensure the questions were understandable and addressed the underlying concepts. We asked participants to provide feedback on the results sections (Appendix 3) and participant feedback was positive. A limitation of this study is that we were not able to contact any participants who did not respond to 6-month follow-up in the wider iDEAS trial. Although we interviewed people with a range of engagement levels in the app, those responding at six months may have been more engaged with the app and the trial than those who did not respond at 6-month follow-up and therefore may have more positive views of the digital interventions than those less engaged. In a similar vein, the timing of the interviews may also have impacted on judgements. We interviewed participants after participating in the wider trial. It is possible that participants who were successful in their alcohol reduction goals would have held more positive views on the intervention. We did not measure whether participants felt they had achieved their alcohol reduction goals and as such, this is something we cannot examine. However, to avoid interviewing just participants who were more engaged with the interventions and therefore more likely to have favourable views, we purposively sampled participants based on a range of engagement levels.

Conclusion

The Drink Less app appears to be an acceptable intervention for increasing-and-higher-risk drinkers captured in this sample. To further this work, future research could examine the relationship between acceptability and engagement and consider how engagement with the app can be increased in the longer term. The NHS alcohol advice webpage not considered to be acceptable as a standalone intervention but may act as a positive signpost for some users.

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Data Availability

Anonymised transcripts generated during this study are available from the corresponding author on reasonable request.

Conflicts of Interest

CA, RB, MM, MH, GL, OP, LD, MF, EB, EP and SM declare no conflicts of interest. JB received unrestricted funding related to smoking cessation research and sits on the scientific advisory board for the SmokeFree app. CG and MO have done paid consultancy work for the behaviour change and lifestyle organization, 'One Year No Beer', providing fact checking for blog posts. FG is employed by both NICE and Imperial and previously by PHE; he has no other conflicts of interest. Outside the submitted work, EK has previously co-authored papers that analysed raw market research consumer-based data provided to Newcastle University under a direct contract with Kantar Worldpanel at no

cost to Newcastle University. Kantar Worldpanel received reimbursement from AB InBev to cover the costs of the data, Kantar WordPanel having similar commercial relationships with other customers who pay to have data collected on food and non-food items available for sale in supermarkets and other retail outlets covered by the WorldPanel.

Author Contributions

MO: Project administration Lead, Methodology Equal, Investigation Equal, Data curation Lead, Writing original draft Lead, Writing review & editing Equal. LD: Project administration Supporting, Investigation Equal, Writing review & editing Equal. GL: Project administration Supporting, Investigation Equal, Writing review & editing Equal. OP: Conceptualization Supporting, Methodology Equal, Writing review & editing Equal. JB: Conceptualization Equal, Funding acquisition Equal, Methodology Equal, Writing review & editing Equal. CA: Conceptualization Supporting, Funding acquisition Supporting, Methodology Equal, Writing review & editing Equal. EB: Conceptualization Supporting, Funding acquisition Supporting, Methodology Equal, Writing review & editing Equal. RB: Conceptualization Equal, Funding acquisition Supporting, Methodology Equal, Writing review & editing Equal. MF: Conceptualization Equal, Funding acquisition Supporting, Methodology Equal, Writing review & editing Equal. FG: Conceptualization Equal, Funding acquisition Supporting, Methodology Equal, Writing review & editing Equal. MH: Conceptualization Equal, Funding acquisition Supporting, Methodology Equal, Writing review & editing-Equal. EK: Conceptualization Equal, Funding acquisition Supporting, Methodology Equal, Writing review & editing Equal. SM: Conceptualization Equal, Funding acquisition Supporting, Methodology Equal, Writing review & editing Equal. MM: Conceptualization Equal, Funding acquisition Supporting, Methodology Equal, Writing review & editing Equal. EP: Conceptualization Supporting, Funding acquisition Supporting, Methodology Equal, Writing review & editing-Equal. CG: Conceptualization Equal, Funding acquisition Equal, Methodology Equal, Data curation Equal, Validation Equal, Writing review & editing Equal.

Abbreviations

AUDIT – Alcohol use disorders identification test
COM-B - Capability opportunity motivation – behaviour model
COREQ – Consolidated criteria for reporting qualitative research
COVID-19 - Coronavirus disease
NHS – National health service (UK)
PPI - Public and patient involvement
RCT – Randomised control trial
TFA - Theoretical framework of acceptability
UCL – University college London

Multimedia Appendices

Multimedia Appendix 1 - Interview Schedule
Multimedia Appendix 2 – COREQ Checklist
Multimedia Appendix 3 - PPI Feedback on Results

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Supplementary Files

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Multimedia Appendixes

Interview Schedule.
URL: http://asset.jmir.pub/assets/bb8e2382e25f676477a36bb7d466996a.docx

COREQ Checklist.
URL: http://asset.jmir.pub/assets/83c592fd83de15a0d259ce8d97d9c969.docx

PPI Feedback on Results.
URL: http://asset.jmir.pub/assets/3420216e0f8b5617a4452877c3c31009.docx

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TOC/Feature image for homepages

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Using Drink Less app.