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Evidence Review B: alcohol

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Evidence reviews

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Review question

What components and characteristics of digital and mobile health interventions are effective at changing drinking behaviours?

Introduction

This review will cover digital and mobile health interventions for the individual. It will address established unhealthy behaviours relating to alcohol consumption. Addressing such behaviours can help to reduce the risk of developing chronic conditions, for example, liver disease as well as improving mental, emotional and social wellbeing. It can also help people to self-manage or self-monitor mental health conditions or alcohol consumption with a view to reduce units consumed.

The review therefore aims to describe individual-level digital and mobile health interventions for changing harmful drinking habits as well as identifying the critical components and intervention characteristics shown to be effective. Intervention components may include:

- Specific behaviour change techniques used
- Digital platform
- Intervention intensity and duration of provision (e.g. number of sessions or messages, total digital contact time or duration of active digital support).
- Recommendation or professional endorsement of an intervention

Other intervention characteristics may include:

- Extent of targeting to a group or tailoring/personalisation to an individual
- Sociodemographic factors of the target audience (such as age, gender, socioeconomic group, and ethnicity and digital literacy)
- Level of healthcare professional/practitioner induction or interaction
- How often the intervention has been designed to be used (such as multiple times a day, once a week, or once only)

PICO table

PICO Element	Details
Population	Included: Everyone, including young people under 16 (and their families or 16 carers), who would benefit from changing current alcohol consumption. Specific consideration will be given to people with the following chronic physical or long-term mental health conditions, who may benefit from managing alcohol consumption because it affects their health or mental wellbeing:

PICO Element	Details
	• Overweight/obesity • Hypertension and cardiovascular disease (including, stroke and coronary heart disease) • Cancers for which managing drinking may improve health outcomes (for example liver, breast, mouth, bowel cancer) • Mental health conditions (including alcohol induced anxiety, depression and dementia for which managing drinking behaviours may improve outcomes) Specific consideration will also be given to people with learning disabilities and people with neurodevelopmental disorders such as autism. **Excluded:** Participants who are classified as harmful drinkers where clinical intervention may be the more appropriate action. Those (including children and young people under 16) who have never drunk alcohol. Those who have previously exhibited unhealthy drinking behaviours and no longer do so, and those who want to maintain healthy behaviours Type and stage of cancers for which managing an established lifestyle behaviour may not improve health outcomes. Any condition listed above not associated causally with alcohol consumption.
Intervention	Digital and mobile health behaviour change interventions that focus on changing current drinking behaviours. That is interventions that are delivered via a digital or mobile platform as a direct interface with participants. Examples include: • Text message based services (including picture messages and audio messages) • Those delivered by the internet (such as by apps, email, websites, videos, social networking sites and multi-media) • Interactive voice response interventions Digital or mobile health interventions are typically automated, interactive and personalised although they may involve some direct or ongoing interaction with a practitioner or health care professional. However, it should be the digital or mobile health technology itself that delivers the primary action, process of intervening or behaviour change techniques (as opposed to the healthcare practitioner or professional). The interventions may also focus on digital and mobile health strategies to improve mental wellbeing in those who drink alcohol (for example, building resilience and managing stress). Studies must primarily focus on changing behaviours in regard to alcohol consumption. If the intervention focuses on changing multiple behaviours then results on alcohol consumption must be reported separately for extraction and analysis to be carried out. If the intervention reports on separate behaviours it may be included in multiple reviews with the relevant outcomes extracted

PICO Element	Details
	according to the protocol and could be further considered in a multi-behaviour meta-regression if data requirements are met for such an approach. **Excluded:** Interventions delivered solely by a healthcare professional or practitioner (for example counselling delivered over the telephone, video-links or by real-time live instant messaging), where the delivery of the primary action or process of intervening or behaviour change techniques is provided by the healthcare professional or practitioner. Digital and mobile health interventions that aim to prevent the uptake of unhealthy drinking behaviours (and/or to help maintain healthy behaviours, including relapse prevention). Clinical interventions to help with the diagnosis, treatment or management of a chronic physical or long-term mental health condition. Psychiatric interventions delivered as part of the therapeutic process for people with a mental health problem. Clinical or pharmacological methods of achieving behaviour change with no public health or health promotion element. For example, appointment reminders, medication reviews or self-care solely to improve medicine adherence. National policy, fiscal and legislative measures Changes to the public realm to support behaviour change (such as designing and managing public spaces in a way that encourages and helps people to be physically active). **Settings:** Any setting where people may be referred to, self-refer to, or access digital or mobile health behaviour change interventions, including online or other digital access platforms. All countries to be included.
Comparator	**Included:** Other intervention for example a healthcare professional led intervention or a combination of health professional and digital led interventions. Passive control group (usual care, no intervention). If longitudinal cohort and 'before-and-after' intervention studies need to be included (see 'study design'), then before and after (time) will be a comparator. Trials with more than one comparator will be included if at least one of the experimental arms meets the technology-based intervention inclusion criteria (see above).
Outcomes	<u>Primary outcomes</u> Descriptive outcomes: Intervention components and study characteristics Short term and long term changes in drinking behaviour measured as: • Quantity of consumption in terms of mean or median units, drinks or grams per day, week, fortnight or month (examined by MD or SMD)

PICO Element	Details
	• Frequency of consumption in terms of percentage of drinking days over time or mean number of heavy drinking days • Intensity of consumption in terms of mean or median or peak drinks per drinking day or on the last or heaviest occasion • AUDIT score at baseline and follow-up Extent of engagement (measured as self report or automatically recorded usage data) • program adherence/attrition, number of log-ins/visits, number of pages visited, number of sessions completed, time spent on the device, number of device components/features used). • Self-reported interaction with the digital or m-health behaviour change intervention (i.e. self-report questionnaires) <u>Secondary outcomes</u> These will be extracted only if the study also reports a primary outcome. • Health-related quality of life • Resources use and costs • Safety or adverse effects, including unintended consequences. **Cost/resource use associated with the intervention** The following outcomes will be extracted in reviews of the health economic evidence, where available: • cost per quality-adjusted life year • cost per unit of effect • net benefit • net present value • cost/resource impact or use associated with the intervention or its components **Excluded**: Any study which does not include a primary outcome.

Methods and process

This evidence review was developed using the methods and process described in Developing NICE guidelines: the manual. Methods specific to this review question are described in the review protocol in Appendix A. Information on the synthesis and quality assessment of included studies is discussed on page 17.

Declarations of interest were recorded according to NICE's 2018 conflicts of interest policy.

Public health evidence

3453 references were identified from literature searches outlined in Appendix E, of which 3280 were excluded on title and abstract. 7 further studies were identified by surveillance, 4 were found through searches of references of relevant systematic reviews and 4 were identified by the committee. 173 papers were ordered in full text. In total 16 primary studies met the inclusion criteria outlined below. 157 studies were excluded. See Appendix C for Public health evidence study selection.

Included studies

Papers were included if they met the PICO and were:

- Randomised controlled trials
- Systematic reviews of randomised controlled trials, if the majority of included studies met the PICO. If the majority of studies did not meet the PICO, individual studies included in the systematic review were considered separately for inclusion in this evidence review.
- Conducted in any country.
- Published between 2000 and 2019.
- Published in English language.
- Had a follow up outcome measure from baseline of at least 6 months.

The health areas given specific consideration included: overweight/obesity, hypertension and cardiovascular disease (including stroke and coronary heart disease), mental health conditions (including alcohol-induced anxiety, depression and dementia for which managing drinking behaviours may improve outcomes)

Specific consideration was also given to people with learning disabilities and people with neurodevelopmental disorders such as autism.

Excluded studies

See appendix K for full list of excluded studies with reasons for exclusion.

Summary of studies included in the evidence review

Study	Population	Intervention	Comparator(s)	Outcome used (relevant to protocol)	Risk of bias
Internet-based interventions (n=13)					
Bertholet et al 2015 (Switzerland)	21-year-old men with unhealthy alcohol use N=737	Computer tailored intervention (individually tailored feedback website)	Assessment only with no feedback *[no intervention control]*	Number drinks per week; AUDIT score	Some concerns
Boß et al 2018 (Germany)	Adults with unhealthy alcohol use N=432	Self-guided computer tailored intervention (individually tailored feedback website)	e-Coach-guided computer tailored intervention *[other intervention]*; waiting list control, assessment only *[no intervention control]*	Number of units per week	Some concerns
Brendryen et al 2017 (Norway)	Adults with unhealthy alcohol use N=85	Computer tailored intervention (feedback website; some elements are individually tailored)	e-booklet on general information about alcohol, guided *[other intervention]*	Number of units per week	Some concerns
Carey et al 2017 (USA)	University students who had binged drunk on at least one occasion in previous 30 days N=381	Computer tailored intervention (individually tailored feedback website; personalised normative feedback; planning)	Baseline assessment with no feedback *[no intervention control]*	Number of drinks per week; peak drinking quantity previous 30 days; heavy drinking frequency previous 30 days; alcohol-related consequences previous 30 days	Some concerns
Collins et al 2014 (USA)	Adults in university with unhealthy alcohol use	Computer tailored intervention (individually tailored	Computer tailored intervention	All past 30 days: number of days	Some concerns

	N=724	feedback website; personalised normative feedback; a novel intervention)	(individually tailored feedback website; personalised normative feedback) *[other intervention]*	drinking; number of units; number of alcohol related problems	
Cunningham et al 2009 (UK)	Adults with unhealthy alcohol use N=185	Computer tailored intervention: personalised normative feedback and predictions of drinking outcomes after using the website.	Feedback on assessment answers and informational components on alcohol *[other intervention]*	Number of drinks per week; AUDIT-C score	Some concerns
Doumas et al 2011 (USA)	Adults in university with an alcohol violation N=135	Computer tailored programme: Web-based, personalised normative feedback (self guided)	Computer tailored programme: Personalised normative feedback via website (counsellor-guided) *[other intervention]*	Peak alcohol consumption past month; alcohol-related consequences past 30 days; number of drinks per week; binge drinking frequency past 2 weeks	High
Epton et al 2014 (UK)	Adults entering university N=1445	Computer tailored intervention: web-based self-affirmation manipulation, messages on alcohol consumption and a planner	Assessment only, no feedback *[no intervention control]*	Number of drinks past 7 days; binge drinking past 7 days	High
Hester et al (2012) (USA)	Adults in university with unhealthy drinking use N=144	Computer tailored programme: computer programme with personalised normative feedback	Assessment only, no feedback *[no intervention control]*	Typical weekly alcohol consumption (number of drinks); number of drinks in	Some concerns

				heavier episodes in past month.	
LaBrie et al. (2013) (USA)	Adults in university with unhealthy drinking use N=558	Computer tailored programme: personalised normative feedback with differing levels of specificity to the individual based on sex, race and Greek status, across 10 arms. Intervention arm with all 3 components used as experimental arm for analyses.	Assessment only, no feedback *[no intervention control]*; Personalised feedback not based on sex, race or Greek status *[other intervention]*.	Peak number of drinks past months; number of days drinking past month; total weekly drinks; alcohol-related negative consequences past month	High
Norman et al (2018) (UK)	Adults in university with unhealthy drinking use N=1475	Computer tailored programme: 3 components (self-affirmation manipulation, theory of planned behaviour (TPB) delivered by viewed information, and implementation intention) tested in a factorial design to give 8 arms. Intervention arm with all 3 components used as experimental arm for analyses.	Arm with no component, assessment only *[no intervention control]*; Self-affirmation manipulation *[active control]*; Information on TPB *[other intervention]*	Total weekly units; no days binge drinking in past month	High
Schulz et al (2013) (Germany)	Adults with unhealthy alcohol use N=448	Computer tailored programme: web-based. 2 intervention groups: 1 group received questions and advice alternatively, 1 group received all advice after answering all questions	Assessment only, no feedback *[no intervention control]*	Number of drinks per week	Some concerns
Walters et al (2009) (USA)	Adults in university with unhealthy drinking use N=279	Computer tailored programme: Web-based personalised normative feedback (self-guided)	Computer tailored programme and a motivational interview: Personalised normative feedback	Total number of drinks per week; number of alcohol-related problems	Some concerns

			including consumption levels, motives, risk factors and readiness to change via website (counsellor-guided) *[other intervention]*		
Text message-based interventions (n=3)					
Crombie et al (2018) (UK)	Men from areas of high deprivation with unhealthy alcohol use N=825	Text message-based intervention: a narrative story around a character and their drinking.	Text messages that did not contain information on alcohol consumption only on changing other health behaviour *[active control]*	Consumption in previous 28 days (g); number of alcohol-free days past month; number of heavy drinking sessions;	Low
Haug et al (2017) (Switzerland)	Adolescents in university who smoke N=1471	Text message-based intervention: feedback and support on smoking cessation and alcohol consumption	Text message-based intervention: smoking cessation support and feedback only *[active control]*	Number of drinks per week Engagement	Some concerns
Suffoletto et al (2015) (USA)	Adults with unhealthy alcohol use N=765	Text message-based intervention: planning and monitoring	Brief, standard alcohol risk-reduction advice *[other intervention]*	Number of days binge drinking past 30 days; drinks per day drinking	Some concerns

Synthesis and quality assessment of effectiveness evidence included in the review

All included studies in this review were randomised controlled trials with a follow-up of 6 months or longer. This time limit was chosen to assess if the interventions produced a sustained behaviour change rather than a short-term change that could be attributed to using a novel product. Studies were assessed for risk of bias using the Cochrane's *Risk of Bias* 2.0 tool as referenced in Appendix H of the NICE methods manual. Meta-analysis was undertaken in Cochrane Review Manager (version 5.3). Subgroup analyses were planned to determine the impact of the digital platform, level of baseline alcohol consumption and population on the pooled result. Studies were grouped by digital platform according to the intervention types specified for inclusion in the review protocol. High alcohol consumption was considered above 14 units a week and low consumption below 14 units a week. Concerning subgroup analyses on population, students were compared to non-students because of the large number of studies that only included students.

For outcomes where the unit of measurement are "drinks", a drink is 8g of pure alcohol (equivalent to 1 UK unit). If a study reported a drink differently, this was converted for consistency. Some studies reported outcomes per week or per month and were converted where necessary to be included in the pooled analyses. Weekly measurements were used for number of drinks and number of days binge drinking as it aligns with how safe drinking limits are reported.

The included studies had different interventions and comparators and therefore analyses have been split accordingly. At least one arm had to have a digital or mobile component. Comparator arms that measure alcohol use only were considered no intervention controls. Comparator arms that do not encourage reducing alcohol use but provide advice on healthy living or a sham intervention not focused on alcohol were considered active controls. Studies with at least two arms that encouraged alcohol reduction were compared in digital intervention vs other intervention comparisons. If studies had no intervention control, active control and multiple intervention arms, the different arms were included in different analyses and noted in the review. 3 comparisons were conducted: intervention vs no intervention control; intervention vs active control; and intervention vs other intervention. Subgroup analysis based on quantity of alcohol consumption at baseline was conducted in the first comparison only to address the heterogeneity seen in the pooled analyses.

With regards to imprecision, minimally important difference (MID) thresholds were used. For continuous outcomes, default MIDs were used (0.5*SD of control group at baseline; if used in a meta-analysis the control group of the study with the highest weight was used). If the confidence interval crosses one lower MID threshold, this indicates 'serious' risk of imprecision. Crossing both MID thresholds indicates 'very serious' risk of imprecision in the effect estimate. When neither of the confidence intervals crossed the MID and the point estimate is also beyond the MID a minimally important difference is present. Overall, the change in the outcome is not meaningful when the CIs cross the MID. If the MID could not be calculated (e.g. because standard deviation of outcome measure at baseline was not reported in the paper) then we downgraded by 1 level as it was 'not possible to calculate imprecision from the information reported in the study. See the methods chapter (attached separately) for more detail.

GRADE methodology was used to appraise the evidence across five potential sources of uncertainty: risk of bias, indirectness, inconsistency, imprecision and other issues. Overall ratings start at 'High' where the evidence comes from RCTs, and 'Low' for evidence derived from observational studies. For further detail on methods including how the evidence for each outcome was appraised using GRADE **see the methods chapter (attached separately).**

Only pooled analyses are displayed in forest plots (Appendix J) and all outcomes are displayed in GRADE tables by outcome (Appendix H).

See appendix F for full evidence tables.

Economic evidence

Included studies

A unified search for economic evidence was conducted across all review questions in the guideline. A total of 5,267 records were assessed against the eligibility criteria. 5,107 records were excluded based on information in the title and abstract. The full-text versions of 160 papers were retrieved and assessed and 1 study was assessed as meeting the inclusion criteria for this review question on alcohol.

A re-run search was carried out in August 2019 to identify any additional economic evidence that was published during guideline development. 1,040 records were excluded based on information in the title and abstract. The full-text versions of 20 papers were retrieved and assessed and none were found to meet the inclusion criteria for this review question.

The selection process is shown in appendix D.

Excluded studies

179 full text documents were excluded for this question. The documents and the reasons for their exclusion are listed in appendix K. Documents were excluded for the following reasons: ineligible population (n=61), ineligible intervention (n=53), ineligible outcomes (n=30), ineligible study design (n=21), systematic review (n=12) and insufficient information about components and characteristics of interest (n=2).

Summary of studies included in the economic evidence review

Study	Intervention and comparator	Costs	Effects	Incremental cost effectiveness and uncertainty	Quality assessment
Crombie 2018 (Scotland, UK) **Currency & cost year:** GBP £; 2016 **Cost-effectiveness and cost-utility analysis** **Population:** Men aged 25–44 years who had ≥ 2 episodes of binge drinking in the preceding 28 days, from areas of high deprivation	**INTERVENTION:** Text messages for reduction in binge drinking: • 112 interactive text messages delivered by mobile phone over a 12-week period **COMPARATOR:** Do nothing (assumed recruitment and implementation costs to be zero and service costs and effectiveness based on control arm of the randomised controlled trial, which involved 89 text messages that did not contain information on alcohol consumption only on general health)	Absolute costs for each strategy not reported separately. Incremental costs for intervention vs. do nothing were as follows: Incremental short-term (1 year) costs per participant assuming *combined recruitment* method: Equivalent trial population = £511 Nationwide rollout = £357 Incremental long-term (30 year) costs per participant assuming *combined recruitment* method: Nationwide rollout = £300	Absolute outcomes for each strategy not reported separately. Incremental outcomes for intervention vs. do nothing were as follows: Incremental (1-year) reduction in people with ≥3 occasions of binge drinking = 0.078 Incremental short-term (1 year) QALYs = -0.0063[(b)] Incremental long-term (30 year) QALYs = -0.0034[(c)]	Incremental cost per one fewer person with ≥ 3 occasions of binge drinking at 1 year: £4,576 Incremental cost per QALY short-term within trial analysis (1 year): Intervention was dominated Incremental cost per QALY long-term modelled analysis (30 years): Intervention was dominated **Analysis of uncertainty:** There was high uncertainty around the incremental QALY results. When considering only the QALY gains to 12 months post intervention there was a 15% probability that the intervention would be cost effective at a threshold of £30,000 per QALY. The univariate sensitivity analyses showed that the intervention was dominated in most scenarios.	**Overall applicability:** Directly applicable **Overall quality:** Potentially serious limitations

Study	Intervention and comparator	Costs	Effects	Incremental cost effectiveness and uncertainty	Quality assessment
		Incremental long-term (30 year) costs per participant assuming *general practice register* recruitment only: Nationwide rollout = £203 Incremental long-term (30 year) costs per participant assuming *time-space sampling* recruitment only: Nationwide rollout = £874			

Economic model

No original economic modelling was undertaken for this question.

Summary of evidence

Outcome	Summary	Confidence	GRADE profile*
Number of drinks per week	Internet-based interventions reduced the number of drinks per week significantly more than no intervention control at 6 months (9 studies) but not at 12 months (2 studies). Interventions were only effective at 6 months for drinkers who drank >14 drinks a week at baseline (4 studies). (Studies that had mean weekly units < 14 were included where they either had a high proportion of binge drinkers, or had a high proportion of people who drank more than the recommended units per week). Interventions were only significantly more effective than control at 6 months for non-student drinkers (3 studies) but not student drinkers (6 studies).	6 months: Low 12 months: Low High consumption: Very low Low consumption: Very low Students: Very low Non-students: Very low	1.1 1.2
	Internet-based interventions did not reduce number of drinks per week significantly more than active controls at 6 months (4 studies) or 12 months (2 studies). A text-message based intervention and the active control were effective at reducing number of drinks per week but the difference between intervention and active control was not significant at 12 months (1 study). There was no significant difference between students (3 studies) and non-students (1 study) when considering the effectiveness of interventions and active controls.	Internet-based: Low Text message-based: High 12 months: High Students: Low Non-students: Low	2.1 2.2
	Compared to other interventions, internet-based interventions did not reduce number of drinks per week as much as the comparator intervention at 6 months (7 studies) and at 12	Internet-based; 6 months: Very low Internet-based; 12 months:	3.1 3.2

	months (2 studies), the difference between interventions is not significant. In students, other interventions were more effective at reducing alcohol consumption than interventions at 6 months (5 studies). In non-students at 6 months, interventions were more effective at reducing alcohol consumption, but the difference was not significant (3 studies).	Very low Interactive voice response intervention; 6 months: Moderate Students: Very low Non-students: Moderate	
Number of days drinking per week	Internet-based interventions compared to no intervention control, were effective at reducing the number of days drinking per week at 6 months, but the change was not meaningful (2 studies). At 12 months, interventions were not significantly more effective than no intervention controls (2 studies).	6 months: Low 12 months: Low	1.3 1.4
	Internet-based interventions did not significantly reduce number of days drinking per week more than active controls at 6 months (1 studies) and at 12 months (1 study).	6 months: Low 12 months: Low	2.3 2.4
	Internet-based interventions reduced the number of days drinking per week at 6 months significantly more than other interventions (2 studies), but no difference was found at 12 months (2 studies).	Internet-based; 6 months: Very low Internet-based; 12 months: Low	3.3 3.4
Number of alcohol-related problems previous 30 days	Internet-based interventions did not significantly reduce the number of alcohol-related problems more than no intervention controls at 6 months (5 studies) or 12 months (2 studies). Internet-based interventions did not significantly reduce the number of alcohol-related problems more than no intervention controls in people with lower or higher consumption (5 and 4 studies, respectively)	6 months: Very low 12 months: Very low Lower consumption: Very low Higher consumption: Low	1.5 1.6

	Internet-based interventions did not significantly reduce the number of alcohol-related problems more than active controls at 6 months (1 studies) or 12 months (1 study).	6 months: Low 12 months: Low	2.5
	There was no difference between internet-based interventions and other interventions when reducing the number of alcohol-related problems over the previous 30 days at 6 months (4 studies) or 12 months (2 study).	6 months: Very low 12 months: Very low	3.5 3.6
Number of days binge drinking previous 7 days	Internet-based interventions did not reduce the number of days binge drinking per week at 6 months significantly compared with no intervention controls (2 studies). A text message-based intervention significantly reduced the number of days binge drinking at 6 months when compared with a no intervention control (1 study).	Internet-based: Very low Text message-based: Low	1.7
	Neither internet-based interventions or active controls did not reduce the number of days binge drinking per week at 6 months and the difference between interventions and active controls was not significant (3 studies). A text message intervention and an active control did not reduce the number of days binge drinking at 6 months and the difference between intervention and control was not significant.	Internet-based: Low Text message-based: High	2.6
	Internet-based interventions and other interventions did not reduce the number of days binge drinking at 6 months and the difference between the interventions was not significant (3 studies).	Very low	3.7
Peak number of drinks in previous 30 days	Internet-based interventions were significantly more effective at reducing peak number of drinks drank on one occasion in the previous 30 days at 12 months (2 studies), but not at 6 months (2 studies), when compared with no intervention controls. The difference at 6 months favoured interventions but was not significant. Interventions were effective at 12 months for drinkers who drank >14 drinks per week at baseline (1 study).	6 months: Low 12 months: Low	1.8 1.9

	Internet-based interventions did not reduce peak number of drinks drank on one occasion in the previous 30 days significantly more than active controls at 6 months (1 studies) and at 12 months (1 study).	6 months: Low 12 months: Very low	2.7 2.8
	Other interventions were significantly more effective at reducing the peak number of drinks drank on one occasion in previous 30 days than the experimental interventions at 6 months (2 studies). An internet-based intervention was more effective at reducing the peak number of drinks drank on one occasion in previous 30 days than the other intervention at 12 months, but the difference was not significant (1 study).	6 months: Low 12 months: Low	3.8 3.9
Drinks per day drinking	A text message-based intervention reduced the number of drinks per day drinking significantly more at 6 months when compared with a no intervention control (1 study).	Moderate	1.10
	An internet-based intervention reduced number of drinks per day drinking significantly more than an active control at 6 months (1 study).	Moderate	2.9
	An internet-based intervention was not significantly more effective at reducing number of drinks per day drinking at 6 months when compared to the other intervention (2 studies). A text message-based intervention was not significantly more effective at reducing number of drinks per day drinking at 6 months when compared to the other intervention (1 study).	Text messages: Moderate Interactive voice response: Moderate	3.10
AUDIT score	An internet-based intervention reduced AUDIT score significantly more than no intervention control at 6 months (1 study).	Moderate	1.11
	An internet-based intervention reduced AUDIT score significantly more than active control at 6 months (1 study).	Moderate	3.11

*GRADE profiles correspond to those in the GRADE tables (Appendix H). Results are presented as outcomes with each comparison listed sequentially.

Economic evidence statements

One cost-utility analysis (Crombie, 2018) found that the impacts of mobile text messages to men in areas of high deprivation on patterns of alcohol consumption, QALYs and downstream costs were inconsistent and uncertain. Overall, the intervention group had slightly worse QALYs and higher costs compared to the control group but the differences were not statistically significant. The analysis was assessed as directly applicable to the review question with potentially serious limitations.

Recommendations

Please refer to the separate guideline document for recommendations.

Rationale and impact

Please refer to the separate guideline document for the rationale and impact.

The committee's discussion of the evidence

Interpreting the evidence

The outcomes that matter most

The committee noted outcomes in order of preference when creating the protocol. Drinking behaviour outcomes and extent of engagement were the primary outcomes. Drinking behaviour outcomes included quantity, frequency and intensity of consumption, while engagement focused on usage data. Secondary outcomes were health-related quality of life, resource use and costs, safety and adverse effects.

The committee noted that there is not a standardised tool for measuring alcohol consumption and that studies rely on self-reporting measures. In addition, the committee noted there is no core set of outcomes concerning alcohol consumption. Therefore, the committee identified the most commonly reported outcomes to be included in the analysis: quantity and frequency of consumption per week or month, and binge drinking. However, this may not be the most important or meaningful outcome in practice, unlike outcomes that assess the effect of alcohol consumption on day-to-day life. The committee noted that if these outcomes were reported in these studies, they would give a better picture of whether the interventions are having a positive effect on people's lives.

The committee noted that in studies that measured multiple outcomes, effectiveness of the intervention usually varied across all outcomes. Different measures of drinking are used because people have different types of problem drinking. Some people drink a lot on 1 day of the week, some people drink consistently over the week but do not binge on any one day, and some people make poor decisions after drinking. Some interventions appear to be effective for one outcome but not others, which lead the committee to consider whether interventions that a certain behaviour, for example binge drinking, would reduce that specific behaviour. This could have allowed the committee to assess if targeting different problem behaviours would lead to positive behaviour change or is no better than a more general approach. But the committee noted the lack of evidence on which to base recommendations. Different sub-behaviours, for example binge drinking, may be influenced more by specific behaviour change approaches. Conversely, this may mean that a sub-behaviour not targeted may not be improved. The lack of consistency in the outcome findings across studies made the committee wary of making component-specific recommendations.

The committee regarded engagement as an important signpost for how well digital interventions may be taken up by the population. The committee acknowledged that data on website hits or frequency or duration of usage alone does not inform how well people are engaging with interventions. People may log on but may not absorb the intervention's content, complete modules or implement suggested behaviours. Evidence was scant and inconsistently reported on usage data and therefore other measures were considered as potential alternatives. One such measure discussed was successful recruitment to studies. The committee agreed that the poor uptake by people who were approached to participate in many studies in the review may suggest problems with uptake of the intervention in the population.

The committee noted that those who completed the studies could be more motivated to change and may have more positive outcomes at follow-up. Most analyses were reported as intention-to-treat with missing data imputed using regression analyses and baseline characteristics. This may have led to inaccuracies in the reported result as two participants may have similar characteristics but very different results because they differ in motivation for change. As motivation was not measured in any of the studies, if one had dropped out their imputed consumption may not be accurate.

The committee discussed motivation as a possible mediator after assessing the consumption of participants in mandated and non-mandated interventions. In 2 studies, participants were given interventions as part of a sanction for violating alcohol rules. Participants taking part in voluntary, non-mandated studies drank less at follow-up than participants in mandated interventions. The committee said that forcing people to undergo an intervention may cause them to rebel and drink more in response. The committee noted that a motivational assessment before digital and mobile interventions may help identify appropriate content to help people get the most from them. The committee suggested that people who are not motivated to change may receive some form of intervention that does not emphasise behaviour change at first, but may try to increase motivation for change. The intervention will check up on the person's motivation at different points (over weeks or months). Only when the person is ready for change will the intervention provide content for behaviour change. However, no evidence was found on the effectiveness on motivational assessments and no recommendation was made.

The quality of the evidence

By using the GRADE approach, the majority of outcomes were rated as low or very low quality. This is because most of the included studies had either serious or very serious risk of bias. In addition, some of the effect estimates were imprecise because of wide confidence intervals. High inconsistency in the outcome effect estimates were addressed by subgroup analyses as advised by the committee. Effect estimates were imprecise meaning there is significant uncertainty concerning whether interventions were effective or not for certain outcomes.

The committee were aware that the available literature would not allow them to make comprehensive and extensive recommendations on which components and characteristics of digital and mobile health interventions should be used to decrease individual’s alcohol consumption. Few studies were identified that compared similar enough interventions to allow the committee to deduce which components and characteristics. There were two studies that had similar interventions in multiple arms. One looked at different reference groups to which people’s drinking would be compared. There was no significant association between how specific the reference groups were and a decrease in alcohol consumption. Another study compared similar interventions that provided feedback on total consumption, but one provided feedback on their perceived advantages and disadvantages of drinking. There was no difference between these interventions either.

As an alternative, subgroup analysis and meta-regression were considered. The aim of the intervention matrix (Appendix L) was to find any component or combinations of components that had a greater likelihood of decreasing alcohol consumption. If any were found, the association would have been explored further by subgroup analyses. However, the study arms had many different interventions and different combinations of interventions. Therefore, it was difficult to isolate which components were driving change. By looking at arms that only contained the component in question, there would be mixed effectiveness across studies. To try and find the differences between effective and ineffective studies with the same component, other components that the studies had were explored to assess if they had an impact. This was done by comparing effectiveness of studies with a component to studies without a component via a risk ratio to show how likely an intervention with a component was

to be effective vs interventions without the component. However, only one component was found to be associated with effectiveness in this way, which was personalised normative feedback (PNF) (more detail given in benefits and harms section).

The committee questioned the effectiveness of achieving long term changes in behaviour. As interventions effective at 6 months were not effective at 12 months for all but one outcome, this called into question the long-term effectiveness of digital and mobile health interventions. The committee noted the lack of long-term data and overall differences in the measures and outcomes used and suggested future research should address this gap in evidence, using the Evidence Standards Framework for Digital Health Technologies when designing interventions.

The committee noted the possible impact on the evidence review of the narrow population considered by most studies. Of the 18 included, 10 studies were in university students and all others were in those under 45. This meant that the direct applicability of the evidence to a much wider population was difficult. The general student community is inherently different to the general population. In addition, the committee questioned the applicability of the evidence based in US universities. In the UK, the aim of the interventions in the studies included was to reduce alcohol consumption but, in the US, abstinence was mentioned as an aim in college-based studies and the outlook of those completing the intervention may be different. People with lower baseline consumption were included in the US studies and this led to a smaller absolute mean difference in comparison to UK studies. Because of this, it was suggested that effective interventions in this area could be generalisable to students only.

The committee were concerned about the broad range in the quantity and frequency of baseline consumption not only between studies, but within studies. The committee found it difficult to compare studies when baseline consumption varied so widely. Some studies included populations with mean baseline consumption below the safe limit of 14 units a week. These studies were for the student population where students had been recommended or mandated interventions to reduce their alcohol consumption. As a result, the committee wanted the forest plots to show absolute baseline and/or relative change to understand the meaningfulness of the change in number of drinks. Through subgroup analysis of comparison 1 (intervention vs control), the committee saw that those with higher baseline consumption were more successful in reducing consumption compared with lower baseline consumption. When studies with students were compared with studies in non-students, interventions were only effective for non-students.

In studies that included drinkers with a wide range of baseline consumption, the committee did not think it was possible to relate the mean change in consumption to lower baseline consumption drinkers or higher baseline consumption drinkers if they were grouped together in a study.

There was large variation in which outcomes were reported between studies with seemingly similar interventions, effect estimates between outcomes in the same study, and imprecise effect estimates arising from large variation in effectiveness between participants in the same study. The committee discussed possible suggestions to explain this variation: variation between study subjects when using self-reported measures and the wide range of baseline consumption in many studies; and the different data collection methods used by the studies. Data collecting methods included asking participants their typical daily or weekly consumption, recording diaries for a week or 30 days either prospectively or retrospectively, through questionnaires such as the AUDIT, FAST, Timeline Followback, Frequency-Quantity questionnaire, Daily Drinking Questionnaire, Dutch 5-item Quantity-Frequency-Variability questionnaire, NIDA Modified Alcohol, Smoking and Substance Involvement Screening Test, provided either over the phone, in person or on paper. These measures differed in how questions were asked, such as average consumption over a week compared to questions that asked for drinking habits per day. Also there was variation in how drinking was reported,

some only asked how many drinks without specifying what they were allowing participants to decide what a “drink” was. Some asked for specific drinks (125 ml of wine, ½ pint of beer), which would allow more consistency.

The committee were not confident that behaviour change techniques were described well in the studies, making it difficult to further consider these in answering the review question. The most commonly reported techniques were feedback and monitoring, comparison of outcomes and shaping knowledge. However, there were no associations between specific components and positive outcomes. Therefore, the committee decided that component-specific recommendations should not be made based on the presented evidence.

The committee discussed that the population in this review question differs from that in related NICE guidelines on alcohol, which includes populations with alcohol disorders and dependency. This means that the recommendations made in this guideline are likely to have a different focus.

Benefits and harms

The committee decided to recommend the use of digital and mobile health interventions to reduce alcohol consumption. A weak recommendation was made since the committee believed that the interventions could work in some settings and populations, such as in underserved groups and young people (aged 18-25). There was no evidence in those over 45 and limited evidence in the non-student population.

The committee discussed the limitations of the evidence and the importance of not limiting individual’s choices in the approaches that they may use to reduce alcohol consumption. They considered it important that the recommendations should not be interpreted as digital and mobile health interventions superseding or reducing access to existing interventions as there was no evidence identified that compared the two. In addition, because of the heterogeneity in effectiveness and the narrow population in the evidence reviewed it is not clear which would be more effective. However, the committee appreciated that digital and mobile health interventions can be appropriate and should be made available.

The committee noted motivation is a typical requirement for effective behaviour change. From a study of an intervention that was not effective in reducing alcohol consumption, the committee discussed that the setting of the study in a place of work may have influenced and increased participation and that the participants may not individually be motivated to reduce alcohol consumption. Furthermore, even though the studies did not provide explicit data on baseline motivation of participants, participants who were willing to take part in voluntary studies were more likely to be motivated to change behaviour than those who did not participate. To this end, motivated people are more likely to successfully reduce their drinking and so should be given the option of a digital intervention. The committee noted that NICE guideline PH49 on behaviour change: individual approaches suggests that motivation is required for any behaviour change. However, the committee for the guideline under development agreed that motivation should not be a prerequisite to receiving an intervention, rather the healthcare professional should discuss readiness for change and the appropriateness of the interventions on offer.

Evidence from 1 study showed an added effect of motivational assessment as a part of the intervention. Therefore, the committee decided that a motivational assessment may help as part of the intervention to get people ready for change without coercion. However, as it was not clear if the motivational assessment itself was driving behaviour change, or if it was another component or combination of components, no recommendation was made. Mandated interventions in studies, for example for alcohol violations on US university campuses, were ineffective. The committee deduced that this was likely due to people resisting an imposed intervention and choosing not to change. In addition, they said that as the intervention was not initiated by choice, the students may not have been ready for

change, tried to reduce consumption and failed, which lead to low self-belief in their ability to change.

Due to the high proportion of the studies that used personalised normative feedback (PNF), the committee noted that it may be a helpful way of presenting consumption to individuals. Those with the highest consumption may believe that it is normal because alcohol is a large part of socialising. However, they may wrongly believe that most other people drink as much as them. By showing them where their consumption sits among that of their peers, PNF may dispel this belief and aid in reducing consumption. The intervention matrix (Appendix L) showed that interventions with personalised normative feedback (PNF) were more likely to be effective than interventions without PNF. Most of the interventions with PNF that were not effective were in populations who were mandated alcohol interventions, such as students with alcohol violations, which the committee believed may have had more of an impact on the results than the intervention content itself.

Groups that have a drinking culture, for instance students, may benefit greatly from this approach. However, in this review, studies that included students had lower alcohol consumption than studies with a non-student population. From this evidence, committee considered limiting recommendations to non-students. However, the baseline consumption was greater in non-students and they deduced that this had more of an effect than being a student or non-student. Therefore, the committee discussed and agreed to recommend interventions to the whole population but make it clear that interventions may have more of an effect for people with baseline drinking above 14 units a week.

The committee agreed that the evidence suggested that there was sufficient evidence to recommend interventions that people interact with multiple times. The evidence discussed showed that interventions people interact with multiple time times were more effective than one-off interventions. These interventions can include components such as daily alcohol diaries, or modules on alcohol consumption to be completed weekly. The committee agreed that the repetitive contact would reiterate the messages to change alcohol consumption and keep them at the forefront of people's minds. The committee also said that the continuous interaction with the intervention would help to make the behaviour change a habit in people's lives. However, the committee were keen to highlight that interventions should remain appropriate for the needs and lifestyle of each individual and some may not be able or want to commit to a higher intensity intervention. Therefore, they created a recommendation saying not to exclude one-off interventions as they also showed some effectiveness. Based on their expertise, the committee also discussed that intensive interventions may be more effective when reducing alcohol consumption.

The committee noted that many interventions with particular combinations of components reduced consumption, but there were few characteristics or components that were consistently more effective than others. In addition, most of the comparisons did not show a statistical difference between arms, but both intervention and comparator were commonly found to be effective compared to baseline.

Cost effectiveness and resource use

One published cost-effectiveness study was identified as meeting the inclusion criteria for this review question. It compared a text message intervention to reduce alcohol consumption to a do-nothing approach in men who lived in socially disadvantaged areas based on a single randomised controlled trial. The do-nothing approach represented standard practice in which recruitment and implementation costs were assumed to be zero and the service costs and the effectiveness outcomes were assumed to be equivalent to those of the control arm of the trial (text messages that did not contain information on alcohol consumption only on general health). The study was conducted from a UK perspective and reported short-term (1-year) within trial results as well as long-term (30-year) modelled results. The study concluded that the intervention resulted in a modest statistically non-significant reduction in the proportion of

men who binge drink at 1 year but the intervention generated fewer quality-adjusted life years (QALYs) than the do-nothing approach in both the 1-year and 30-year analyses. The intervention was more costly than the do-nothing approach and therefore the results suggested that the intervention was not cost effective. However, the difference in QALYs was small and subject to considerable uncertainty. The committee noted that for the short-term analysis, QALYs had been estimated using EQ-5D-5L values measured at a single time point (1 year) with no baseline measurement, so it was not possible to estimate if there was any change in QALYs from baseline in the control arm.

The committee could not draw any generalisable conclusions about the cost effectiveness of specific components and characteristics of digital interventions for changing alcohol consumption based on a single cost-effectiveness study. Instead, the committee focussed its discussion on the different types of costs that the analysis quantified, including recruitment costs, intervention costs and downstream costs related health, social care and criminal justice services. The committee noted that the study took into account the cost of recruiting participants from areas of high deprivation using 2 approaches: (1) general practice registers, which GPs screened and sent potential participants a letter inviting them to take part and (2) time-space sampling, which is a more resource-intensive community outreach strategy that recruited participants from venues in disadvantaged areas at different times of the day and on different days of the week. Time-space sampling was more costly than the general practice register approach (approximately £100 vs £74 per recruited participant) based on the trial population. In a subgroup analysis, the text message intervention was also found to be less effective in people recruited using the time-space sampling approach compared to the general practice register approach.

The study also explored how scalability might affect the cost effectiveness of a digital intervention by estimating cost per participant for both the equivalent trial population (825 participants) and a national rollout of the intervention to England and Scotland (218,417 participants), assuming a combined recruitment strategy of both general practice registers and time-space sampling. The national rollout allowed the costs of delivering the text messaging intervention (for example IT system, programme management and staff costs) to be spread over a larger population, reducing from approximately £47 to £17 per participant. However, recruitment costs would still be incurred. For the national rollout scenario, the overall programme cost was estimated at £97 per participant, of which approximately 80% was attributable to recruitment costs.

The committee discussed that although one of the perceived advantages of digital interventions is their potential to reach a wider population at low cost, the study highlighted the importance of considering not just the costs of delivering a digital intervention, but also the potential costs involved in reaching populations that might not otherwise routinely have access to behaviour change interventions. In the case of alcohol misuse, the committee felt there may be additional trade-offs to consider between the higher cost of reaching disadvantaged or underserved groups and the potential to reduce health inequalities.

Other factors the committee took into account

The committee discussed the scalability and how digital interventions could be implemented. They discussed that digital is seen as a medium that can reach everyone and is appealing for commissioners and healthcare providers. When considering the low recruitment of participants to digital intervention studies, the committee questioned the scalability and implementation of these interventions. In addition, they also raised that there is significant competition between apps and interventions that appear online. They noted that the mechanism by which certain apps and websites gain popularity remains elusive. Without engagement data, they expressed that this review could not determine what makes an intervention more appealing and therefore scalable.

The committee discussed the possibility of recommending apps from trusted sources. One such source was the Public Health England app and the NHS Apps Library. However, it was raised that external links in an area which is fast changing will soon be out of date or broken. In addition, as trusted source is a subjective term, recommending people use trusted source apps without specifying which could lead to the use of inappropriate interventions.

The committee suggested that making recommendations more generally across behaviours may be an option. The committee considered looking at all review questions to assess any commonality in positive evidence for certain interventions and for specific populations. In addition, because general health interventions that did not include components on alcohol still significantly reduced consumption, the committee considered interventions that would encompass general health.

In addition, people who are shielding during the COVID-19 pandemic may benefit from using digital and mobile interventions as it allows them to access a remote service during social distancing.

The committee also considered the harms of inappropriate and/or targeted adverts that may interfere or counteract the aims of the interventions such as for alcoholic drinks. However, many interventions use adverts as a source of revenue meaning a reduced cost for the user. But paid-for interventions typically have fewer or no adverts.

To try and find a compromise between accessibility and adverts, they discussed whether developers could control which adverts appear in interventions. They concluded that it would be very difficult to control because advert management may be is usually outsourced to a third party. In addition, it would be difficult to assess and classify many adverts as either appropriate or inappropriate. Therefore, the committee concluded that the accessibility benefits of lower cost interventions outweighed the harms of adverts. However, they did make a recommendation for commissioners to put preference on advert-free interventions but reminding commissioners that advert can increase access to interventions.

This guideline was developed and went out for consultation before the effects of the COVID-19 pandemic were apparent in the UK. The committee were aware that current healthcare practice has changed, and this may cause long-term changes to how services are delivered. Many services normally given in-person are delivered remotely through video or phone calls while social distancing measures are in place. Even though these services are out of scope for this guideline because they have significant healthcare professional involvement, they are delivered through digital means. The committee were concerned that this may cause a drift towards purely digital services that are the subject of this guideline. This may mean people who are not suitable for digital or mobile health interventions are pushed into using them. It would also effectively reduce the range of options available to people. This could exacerbate already widening health inequalities. The committee wanted to make commissioners and healthcare professionals who may recommend these interventions aware of this possibility and mitigate detrimental use of these interventions.

Overall discussion of the evidence across all review questions

Please refer to the separate guideline document (evidence review 1 – smoking behaviour) for the committee discussion of the evidence across all review questions.

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Appendices

Appendix A – Review protocols

Review protocol for changing alcohol consumption

Field (based on PRISMA-P	Content
Review question	What components and characteristics of digital and mobile health interventions are effective at changing drinking behaviours?
Type of review question	Effectiveness
Objective of the review	This review aims to describe individual-level digital and mobile health interventions for changing behaviour in the target area of alcohol consumption and will identify the critical components and intervention characteristics shown to be effective. Intervention components may include: Specific behaviour change techniques used Digital platform Intervention intensity and duration of provision (e.g. number of sessions or messages, total digital contact time or duration of active digital support). Recommendation or professional endorsement of an intervention

	Other intervention characteristics may include: Particular groups of interest (see 'population') Extent of targeting to a group or tailoring/personalisation to an individual Sociodemographic factors of the target audience (such as age, gender, socioeconomic group, and ethnicity and digital literacy) Level of healthcare professional/practitioner induction or interaction Level of user engagement
Eligibility criteria – population/disease/condition/issue/domain	**Included**: Everyone, including young people under 16 (and their families or 16 carers), who would benefit from changing current alcohol consumption. Specific consideration will be given to people with the following chronic physical or long-term mental health conditions, who may benefit from managing alcohol consumption because it affects their health or mental wellbeing: Overweight/obesity Hypertension and cardiovascular disease (including, stroke and coronary heart disease) Cancers for which managing drinking may improve health outcomes (for example liver, breast, mouth, bowel cancer)

	Mental health conditions (including alcohol induced anxiety, depression and dementia for which managing drinking behaviours may improve outcomes) Specific consideration will also be given to people with learning disabilities and people with neurodevelopmental disorders such as autism. **Excluded**: Participants who are classified as harmful drinkers where clinical intervention may be the more appropriate action. Those (including children and young people under 16) who have never drank alcohol. Those who have previously exhibited unhealthy drinking behaviours and no longer do so, and those who want to maintain healthy behaviours Type and stage of cancers for which managing an established lifestyle behaviour may not improve health outcomes. Any condition listed above not associated causally with alcohol consumption.
Eligibility criteria – intervention(s)/ exposure(s)/pr ognostic factor(s)	Digital and mobile health behaviour change interventions that focus on changing current drinking behaviours. That is interventions that are delivered via a digital or mobile platform as a direct interface with participants. Examples include: Text message based services (including picture messages and audio messages)

	Those delivered by the internet (such as by apps, email, websites, videos, social networking sites and multi-media) Interactive voice response interventions Digital or mobile health interventions are typically automated, interactive and personalised although they may involve some direct or ongoing interaction with a practitioner or health care professional. However it should be the digital or mobile health technology itself that delivers the primary action, process of intervening or behaviour change techniques (as opposed to the healthcare practitioner or professional). The interventions may also focus on digital and mobile health strategies to improve mental wellbeing in those who drink alcohol (for example, building resilience and managing stress). Studies must primarily focus on changing behaviours in regard to alcohol consumption. If the intervention focuses on changing multiple behaviours then results on alcohol consumption must be reported separately for extraction and analysis to be carried out. If the intervention reports on separate behaviours it may be included in multiple reviews with the relevant outcomes extracted according to the protocol, and could be further considered in a multi-behaviour meta-regression if data requirements are met for such an approach. **Excluded**: Interventions delivered solely by a healthcare professional or practitioner (for example counselling delivered over the telephone, video-links or by real-time live instant messaging), where the delivery of the primary action or process of intervening or behaviour change techniques is provided by the healthcare professional or practitioner.

	Digital and mobile health interventions that aim to prevent the uptake of unhealthy drinking behaviours (and/or to help maintain healthy behaviours, including relapse prevention. Clinical interventions to help with the diagnosis, treatment or management of a chronic physical or long-term mental health condition. Psychiatric interventions delivered as part of the therapeutic process for people with a mental health problem. Clinical or pharmacological methods of achieving behaviour change with no public health or health promotion element. For example, appointment reminders, medication reviews or self-care solely to improve medicine adherence. National policy, fiscal and legislative measures Changes to the public realm to support behaviour change (such as designing and managing public spaces in a way that encourages and helps people to be physically active).

	Settings: Any setting where people may be referred to, self-refer to, or access digital or mobile health behaviour change interventions, including online or other digital access platforms. All countries to be included.
Eligibility criteria – comparator(s)/ control or reference (gold) standard	**Included**: Other intervention for example a healthcare professional led intervention or a combination of health professional and digital led interventions. Passive control group (usual care, no intervention). If longitudinal cohort and 'before-and-after' intervention studies need to be included (see 'study design'), then before and after (time) will be a comparator. Trials with more than one comparator will be included if at least one of the experimental arms meets the technology-based intervention inclusion criteria (see above).
Outcomes and prioritisation	<u>Primary outcomes</u> Descriptive outcomes: Intervention components and study characteristics Short term and long term changes in drinking behaviour measured as: Quantity of consumption in terms of mean or median units, drinks or grams per day, week, fortnight or month (examined by MD or SMD)

	Frequency of consumption in terms of percentage of drinking days over time or mean number of heavy drinking days Intensity of consumption in terms of mean or median or peak drinks per drinking day or on the last or heaviest occasion AUDIT score at baseline and follow-up Extent of engagement (measured as self report or automatically recorded usage data) program adherence/attrition, number of log-ins/visits, number of pages visited, number of sessions completed, time spent on the device, number of device components/features used). Self-reported interaction with the digital or m-health behaviour change intervention (i.e. self-report questionnaires) <u>Secondary outcomes</u> These will be extracted only if the study also reports a primary outcome. Health-related quality of life Resources use and costs Safety or adverse effects, including unintended consequences. <u>Follow-up</u>

	Studies must report change from baseline of ≥6 months. **Cost/resource use associated with the intervention** The following outcomes will be extracted in reviews of the health economic evidence, where available: cost per quality-adjusted life year cost per unit of effect net benefit net present value cost/resource impact or use associated with the intervention or its components **Excluded**: Any study which does not include a primary outcome.
Eligibility criteria – study design	**Included study designs**: <u>Effectiveness studies</u>: Systematic reviews of effectiveness studies Studies of effectiveness including:

	RCTs (including cluster RCTs) Economic studies: Cost-utility (cost per QALY) Cost benefit (i.e. net benefit) Cost-effectiveness (Cost per unit of effect) Cost minimization Cost-consequence **Excluded study designs**: Cross-sectional studies
Other inclusion exclusion criteria	Systematic reviews (SRs) identified from database searches may be included as a primary source of data. Quality of identified SRs will be assessed against the inclusion criteria for this protocol. Where partially or fully applicable, the quality of the SR will be assessed using the ROBIS tool. Where the SR is: Fully applicable and moderate or high quality: details or data from systematic review will be used.

	Partially applicable and moderate or high quality: details or data from systematic review will be used. Any sections of the protocol not covered by the SR will be covered by usual searches. In addition to any SRs meeting the above criteria, other primary studies will be included if they were published after the publication date of the SR and meet the protocol inclusion criteria. Where SRs identified from database searches do not meet the above criteria, the included studies will be sifted to identify any primary studies not already identified by the searches that meet the inclusion criteria for this review. Full economic analyses and costing studies identified from searches will be included. Costing data will not be used for the purpose of the effectiveness review. Health economics reviews and modelling will be conducted by the York Health Economics Consortium (YHEC). Only papers published in the English language will be included. Only studies published since the year 2000 will be included. Only full published studies (not protocols or summaries) will be included.
Proposed sensitivity/sub-group analysis, or meta-regression	Where sufficient data are available, subgroup analysis or meta-regression will be used to identify the critical components or characteristics of interventions shown to be effective. Intervention components may include: Specific behaviour change techniques used Digital platform Intervention intensity and duration of provision (e.g. number of sessions or messages, total digital contact time or duration of active digital support).

	Recommendation or professional endorsement of an intervention Other intervention characteristics may include: Particular groups of interest (see 'population') Extent of targeting to a group or tailoring/personalisation to an individual Sociodemographic factors of the target audience (such as age, gender, socioeconomic group, and ethnicity and digital literacy) Level of healthcare professional/practitioner induction or interaction Level of user engagement
Selection process – duplicate screening/selection/analysis	The review will use the priority screening function within the EPPI-reviewer systematic reviewing software. Double screening will be carried out for 10% of titles and abstracts by a second reviewer. Disagreements will be resolved by discussion. Inter-rater reliability will be assessed and reported. If below 90%, a second round of 10% double screening will be undertaken. The study inclusion and exclusion lists will be checked with members of the PHAC to ensure no studies are excluded inappropriately.
Data management (software)	EPPI Reviewer will be used: to store lists of citations to sift studies based on title and abstract

	to record decisions about full text papers to order freely available papers via retrieval function to request papers via NICE guideline Information Services to store extracted data Cochrane Review Manager 5 will be used to perform meta-analyses. R will be used for meta-regression.
Information sources – databases and dates	The purpose of the search is to identify the best available evidence to address the questions without producing an unmanageable volume of results. The following methods will be used to identify the evidence: the databases listed below will be searched with an appropriate strategy. the websites listed below will be searched or browsed with an appropriate strategy. **Database strategies** The database strategy will be adapted as appropriate from the one used in PH49 in 2013, taking into account the resources available to this review, the subscriptions that NICE has, changes in indexing policies and the final scope for the current evidence reviews.

	The principal search strategy is listed in Appendix A. The search strategy will take this broad approach: Behaviour change AND unhealthy behaviours (as detailed in the scope) AND digital OR mobile health interventions AND 2000-Current AND Limits Each unhealthy behaviour (lack of physical activity, unhealthy eating patterns or sedentary behaviour, smoking, hazardous or binge drinking and unsafe sexual behaviour) will be searched separately according to the individual Review Protocols. Feedback on the principal database strategy was sought from PHAC members. The principal search strategy will be developed in MEDLINE (Ovid interface) and then adapted, as appropriate, for use in the other sources listed, taking into account their size, search functionality and subject coverage. The other databases will be: Cochrane Central Register of Controlled Trials (CENTRAL) via Wiley Cochrane Database of Systematic Reviews (CDSR) via Wiley

	DARE (records up to March 2014 only) (CRD Embase via Ovid Health Management Information Consortium (HMIC) via Ovid MEDLINE via Ovid MEDLINE-in-Process (including Epub Ahead-of-Print) via Ovid PsycINFO via Ovid Social Policy and Practice (SPP) via Ovid **Database search limits** Database functionality will be used, where available, to exclude: non-English language papers animal studies editorials, letters and commentaries conference abstracts and posters registry entries for ongoing or unpublished clinical trials

	duplicates. Sources will be searched from 2000 to current. The database search strategies will not use any search filters for specific study types. **Cost effectiveness evidence** A separate search will be done for cost effectiveness evidence. The following databases will be searched again with agreed study-type search filters applied to a strategy based on the one in Appendix A: Embase via Ovid MEDLINE via Ovid MEDLINE-in-Process (including Epub Ahead-of-Print) via Ovid In addition, the following sources will be searched without study filters:

	EconLit via Ovid HTA database via CRD https://www.crd.york.ac.uk/CRDWeb/ NHS EED via CRD https://www.crd.york.ac.uk/CRDWeb **Website searching** The following websites will be searched with an appropriate strategy and the first 50 results examined to identify any UK reports or publications relevant to the review that have not already been identified: Google (restricting to uk domains) www.google.co.uk Google Scholar www.scholar.google.com NICE Evidence Search https://www.evidence.nhs.uk Searches will also be conducted on the following key websites for relevant UK reports or publications:

	Public Health England (www.gov.uk/government/organisations/public-health-england) Public Health Wales (www.wales.nhs.uk) Scottish Public Health Observatory (www.scotpho.org.uk) Department of Health (www.gov.uk/government/organisations/department-of-health) Public Health Agency (Northern Ireland) (www.publichealth.hscni.nt) Public Health Institute (www.cph.org.uk) Royal Society for Public Health (https://www.rsph.org.uk/) Centre for Behaviour Change UCL (https://www.ucl.ac.uk/behaviour-change) The Kings Fund (https://www.kingsfund.org.uk/) The Behavioural Insights Team (https://www.behaviouralinsights.co.uk/) Nesta (https://www.nesta.org.uk/) dblb computer science bibliography (https://dblp.uni-trier.de/) ACM Digital library (https://dl.acm.org/) The website results will be reviewed on screen and documents in English that are potentially relevant to review questions will be listed with their title and abstract (if available) in a Word document.

	Quality assurance The guidance Information Services team at NICE will quality assure the principal search strategy and peer review the strategies for the other databases. Any revisions or additional steps will be agreed by the review team before being implemented. Any deviations and a rationale for them will be recorded alongside the search strategies. **Search results** The database search results will be downloaded to EndNote before duplicates are removed using automated and manual processes. The de-duplicated file will be exported in RIS format for loading into EPPI-Reviewer for data screening.
Identify if an update	[If anupdate to an existing review, include question and date of original search. If helpful, add recommendations that might change as a result of this update.]
Author contacts	Please see the guideline development page
Highlight if amendment to	For details please see section 4.5 of Developing NICE guidelines: the manual

previous protocol	
Search strategy – for one database	For details please see appendix E of the full guideline
Data collection process – forms/duplicate	A standardised evidence table format will be used, and published as appendix F (effectiveness evidence tables) or I (economic evidence tables) of the full guideline.
Data items – define all variables to be collected	For details please see evidence tables in appendix F (effectiveness evidence tables) or I (economic evidence tables) of the full guideline.
Methods for assessing bias at outcome/study level	Standard study checklists were used to critically appraise individual studies. For details please see Appendix H of Developing NICE guidelines: the manual Where appropriate, the risk of bias across all available evidence was evaluated for each outcome using an adaptation of the 'Grading of Recommendations Assessment, Development and Evaluation (GRADE) toolbox' developed by the international GRADE working group http://www.gradeworkinggroup.org/ When applying GRADE, where RCTs are considered the best available evidence for the question and outcome in question, they will start as high quality evidence. Where RCTs are not the most appropriate study design for a particular question or outcome, GRADE will be modified to allow for the study design considered most appropriate to start as high quality.

	Any adaptations of GRADE will be explained fully including a rationale to support the adaptation.
Criteria for quantitative synthesis (where suitable)	Studies will be grouped according to the type of intervention as appropriate. For details please see section 6.4 of Developing NICE guidelines: the manual
Methods for analysis – combining studies and exploring (in)consistency	For full details please see the methods chapter of the full guideline. Meta-analysis will be firstly used to determine the effect of digital and mobile health interventions within the specified behaviour area by synthesising all available data, regardless of study components or characteristics. This will provide an overall estimate of the effect of the interventions on behaviour. In order to carry out a meta-analysis, there will need to be similar studies meeting the inclusion criteria. Data from different studies will be meta-analysed if the studies are similar enough in terms of population, interventions, comparators and outcomes. Where meta-analysis is appropriate, a random effects model will be used to allow for the anticipated heterogeneity. This assumption will be tested with a fixed effects model. Unexplained heterogeneity will be examined where appropriate with sensitivity analysis. If the studies are found to be too heterogeneous to be pooled statistically, a narrative synthesis will be conducted. Methods for pooling cluster and individual randomised controlled trials will be considered where appropriate. If data are suitable for meta-analysis, subgroup meta-analyses will be used to answer the sub-questions identified above. If meta-analysis is deemed possible, subgroup analysis or meta-regression may (if appropriate) be used to assess whether between-study variation in intervention effectiveness can be attributed to the presence of

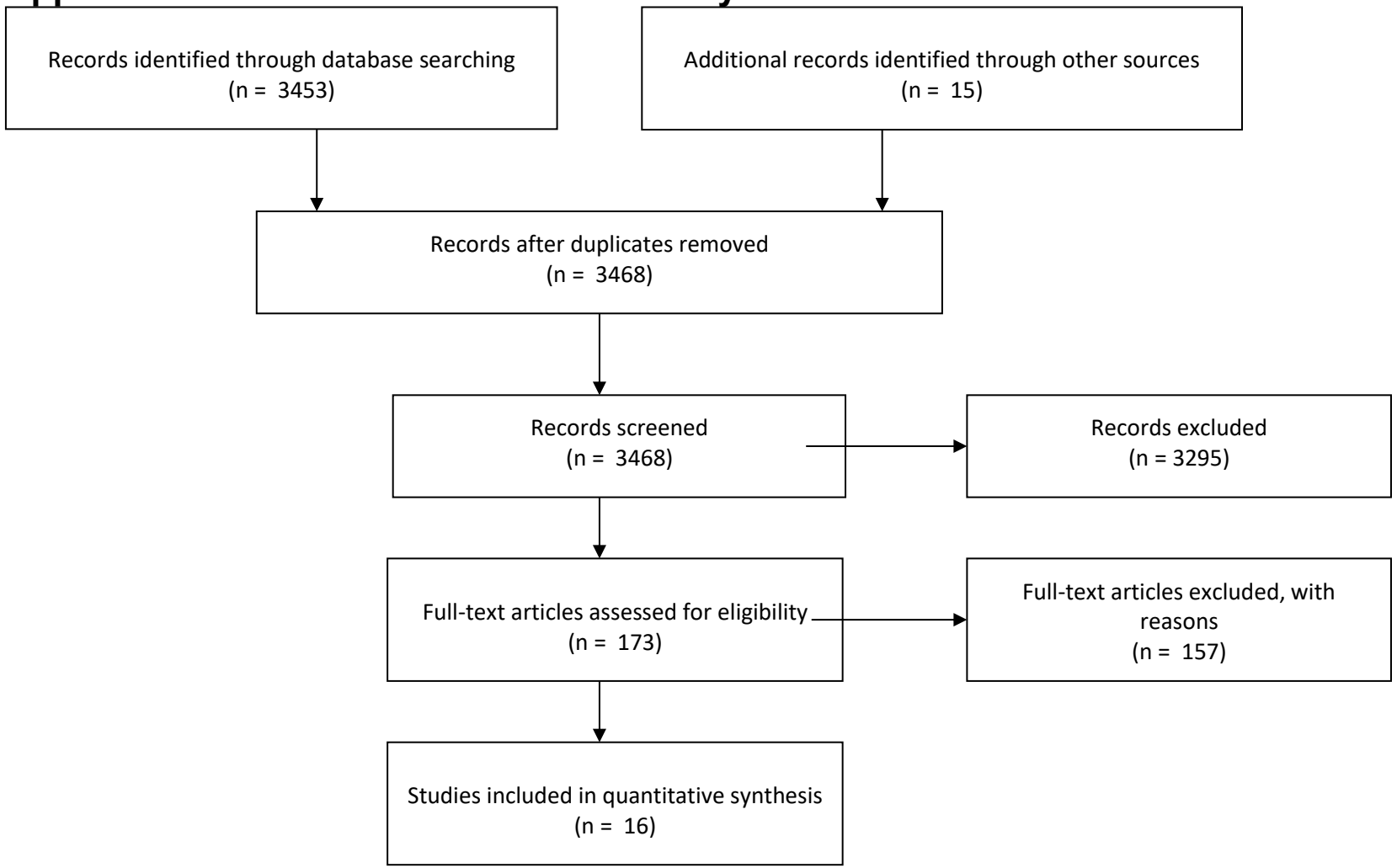
	various study components or characteristics. Regression coefficients and their test of significance will be reported.
Meta-bias assessment – publication bias, selective reporting bias	For details please see section 6.2 of Developing NICE guidelines: the manual.
Assessment of confidence in cumulative evidence	For details please see sections 6.4 and 9.1 of Developing NICE guidelines: the manual
Rationale/context – Current management	For details please see the introduction to the evidence review in the full guideline.
Describe contributions of authors and guarantor	A multidisciplinary committee will develop the guideline. The committee will be convened by Public Health Internal Guidelines Development (PH-IGD) team and chaired by Ralph Bagge in line with section 3 of Developing NICE guidelines: the manual. Staff from Public Health Internal Guidelines Development team will undertake systematic literature searches, appraise the evidence, conduct meta-analysis where appropriate and draft the guideline in collaboration with the committee. Cost-effectiveness analysis will be conducted by YHEC where appropriate. For details please see Developing NICE guidelines: the manual.

Sources of funding/support	PH-IGD is funded and hosted by NICE. YHEC are contracted/funded by NICE to deliver cost effectiveness reviews and economic modelling for public health guidelines.
Name of sponsor	PH-IGD is funded and hosted by NICE
Roles of sponsor	NICE funds PH-IGD to develop guidelines for those working in the NHS, public health and social care in England
PROSPERO registration number	[If registered, add PROSPERO registration number]

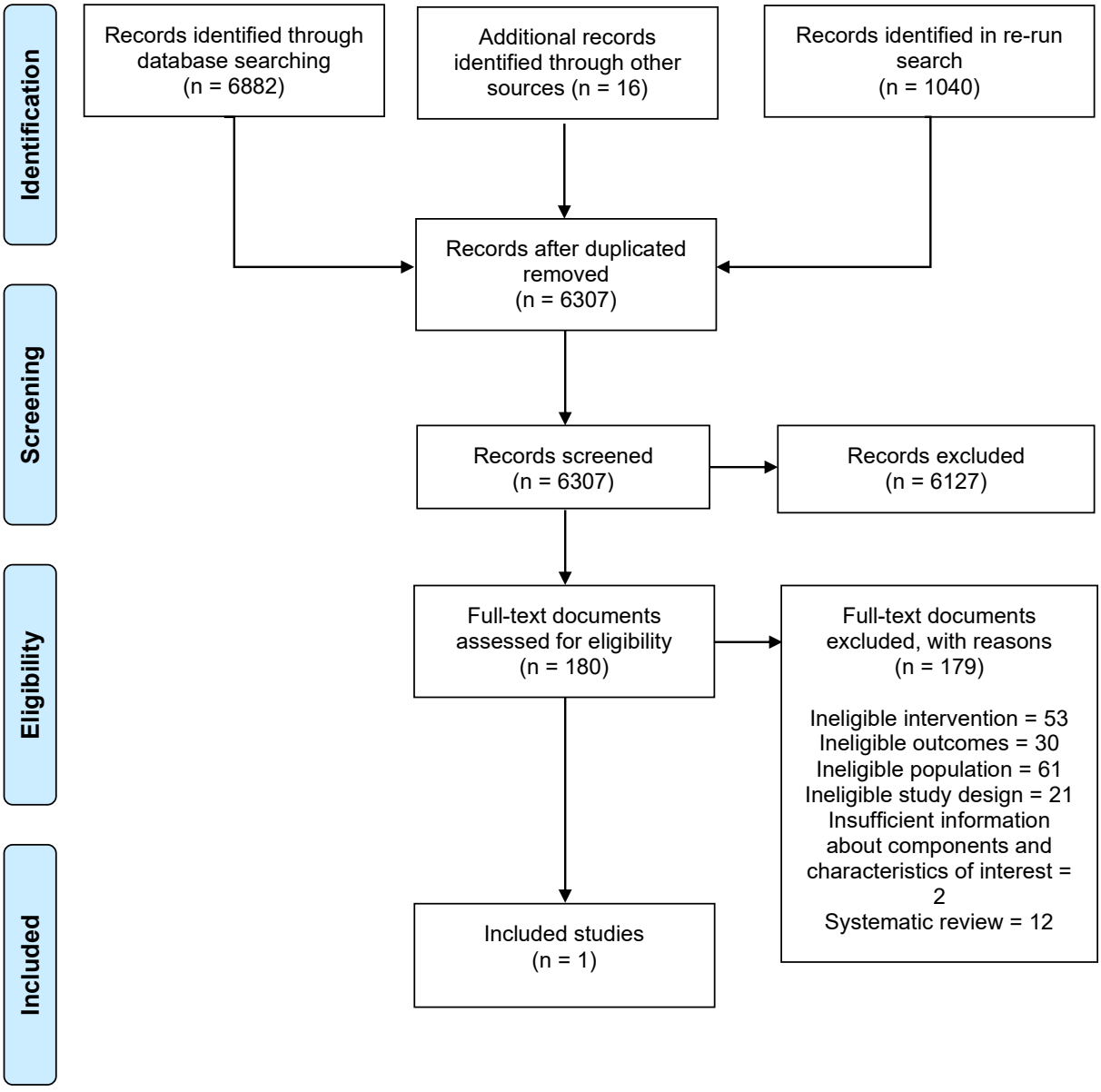
Appendix B – Research recommendations

See evidence review A (smoking) for all research recommendations and PICO tables.

Appendix C – Public health evidence study selection



Appendix D – Economic evidence study selection



Appendix E – Literature search strategies

Public health evidence

Database name: MEDLINE

1 Health Behavior/ (45441)

2 Health Knowledge, Attitudes, Practice/ (99334)

3 Risk Reduction Behavior/ (11039)

4 Behavior Therapy/ (26443)

5 PSYCHOTHERAPY/ (51987)

6 Cognitive Therapy/ (22493)

7 MOTIVATION/ (61331)

8 Patient Education as Topic/ (80760)

9 Patient acceptance of healthcare/ (40550)

10 Health promotion/ (67743)

11 "Outcome and Process Assessment (Health Care)"/ (25390)

12 ((behavio?r* or lifestyle* or "life style*") and (change* or changing or modification or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)).ti. (30964)

13 ((behavio?r* or lifestyle* or "life style*") adj2 (change* or changing or modification or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)).ab,kw. (85180)

14 motivat*.ti. (14309)

15 or/1-14 (528424)

16 exp ALCOHOL-RELATED DISORDERS/ (108342)

17 exp ALCOHOL DRINKING/ (63905)

18 exp Alcoholic Beverages/ (18476)

19 Drinking Behavior/ (6544)

20 ((Alcohol* or Drunk* or Drink* or beer* or wine* or liqor* or liquor* or spirit* or alcopop* or cider*) adj4 (consum* or misus* or abus* or intoxicat* or inebriat* or excess* or bing* or hazardous or harmful or heavy or problem* or risk* or frequen* or behavio?r* or temperance or abstinence or abstain* or stop or stopping)).tw. (101638)

21 or/16-20 (211898)

22 TELEMEDICINE/ (18398)

23 Therapy, Computer-Assisted/ (6385)

24 User-Computer Interface/ (35044)

25 Software Design/ (5718)

26 MULTIMEDIA/ (1801)

27 Computers, Handheld/ (3281)

28 Videotape Recording/ (11112)

29 Internet/ (66389)

30 Social Networking/ (2228)

31 Blogging/ (892)

32 Social Media/ (5193)

33 Electronic Mail/ (2469)

34 Cell Phones/ (7536)

35 Text Messaging/ (2064)

36 Smartphone/ (2370)

37 Mobile Applications/ (3554)

38 WEARABLE ELECTRONIC DEVICES/ (621)

39 Video Games/ (4449)

40 Virtual Reality/ (562)

41 ((digital* or digitis* or digitiz* or electronic*) adj3 (intervention* or therap* or treatment* or medicine* or medical* or health* or monitoring or clinical* or communicat* or technol* or media* or device* or platform* or forum* or community* or communities* or discussion*)).tw. (40659)

42 (telemed* or tele-med* or telehealth* or tele-health* or telecar* or tele-car*).tw. (10636)

43 (ehealth* or e-health* or mhealth* or m-health* or mobile health*).tw. (4864)

44 ((laptop or palm or handheld or tablet or pda or pc) adj2 comput*).tw. (2361)

45 ((mobile* or cell* or tablet*) adj (phone* or telephone* or handset* or hand-set*)).tw. (7325)

46 (smartphone* or smart-phone* or smart telephone* or iphone* or i-phone* or ipad* or i-pad* or blackberry* or smartwatch* or smart-watch* or android or device-based or mobile-based or podcast*).tw. (9150)

47 ((mobile or electronic* or digital*) adj2 (device* or tablet*)).tw. (6390)

48 ((mobile or electronic* or digital* or device* or software*) adj3 application*).tw. (8345)

49 (app or apps or wearable* or online* or on-line* or internet* or www or web or website* or webpage* or portal or search engine*).tw. (275383)

50 (e-mail* or email* or electronic mail*).tw. (11311)

51 (text messag* or texting or texter* or texted or SMS or short messag* or multimedia messag* or multi-media messag* or mms or instant messag* or picture messag* or audio messag*).tw. (10172)

52 (Facebook* or YouTube* or Twitter* or LinkedIn* or Pinterest* or Google* or Tumblr* or Instagram* or WhatsApp* or Reddit* or Flickr* or SnapChat* or Yahoo* or Bing* or MSN* or Wikipedia* or Web 2* or alexa or siri or fitbit*).tw. (33136)

53 (social media* or social network* or blog* or vlog* or video-blog* or gaming or game or games or gamification or wii fit or discussion board* or online forum*).tw. (40378)

54 ((virtual or augmented) adj3 reality).tw. (6605)

55 Speech Recognition Software/ (639)

56 ((voice* or speech or speak*) adj3 response* adj3 (interact* or unit*)).tw,kw. (697)

57 IVR.tw. (933)

58 or/22-57 (485021)

59 and/15,21,58 (2103)

60 limit 59 to yr="2000 -Current" (1982)

61 limit 60 to english language (1935)

62 Animals/ not Humans/ (4485238)

63 61 not 62 (1911)

64 limit 63 to (clinical conference or comment or editorial or historical article or letter or news) (16)

65 63 not 64 (1895)

Database name: Cochrane Library

#1 [mh ^"Health Behavior"]

#2 [mh ^"Health Knowledge, Attitudes, Practice"]

3 [mh ^"Risk Reduction Behavior"]

#4 [mh ^"Behavior Therapy"]

#5 [mh ^Psychotherapy]

#6 [mh ^"Cognitive Therapy"]

#7 [mh ^Motivation]

#8 [mh ^"Patient Education as Topic"]

#9 [mh ^"Patient acceptance of healthcare"]

#10 [mh ^"Health promotion"]

#11 [mh ^"Outcome and Process Assessment (Health Care)"]

#12 ((behavio?r* or lifestyle* or "life style*") and (change* or changing or modification or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)):ti

#13 ((behavio?r* or lifestyle* or "life style*") near/2 (change* or changing or modification or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)):ab,kw

#14 motivat*:ti

#15 #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14

#16 [mh "ALCOHOL-RELATED DISORDERS"]

#17 [mh "ALCOHOL DRINKING"]

#18 [mh "Alcoholic Beverages"]

#19 [mh ^"Drinking Behavior"]

#20 ((Alcohol* or Drunk* or Drink* or beer* or wine* or liqor* or liquor* or spirit* or alcopop* or cider*) near/4 (consum* or misus* or abus* or intoxicat* or inebriat* or excess* or bing* or hazardous or harmful or heavy or problem* or risk* or frequen* or behavio?r* or temperance or abstinence or abstain* or stop or stopping)):ab,kw

#21 #16 or #17 or #18 or #19 or #20

#22 [mh ^Telemedicine]

#23 [mh ^"Therapy, Computer-Assisted"]

#24 [mh ^"User-Computer Interface"]

#25 [mh ^"Software design"]

#26 [mh ^Multimedia]

#27 [mh ^"Computers, Handheld"]

#28 [mh ^"Videotape Recording"]

#29 [mh ^Internet]

#30 [mh ^"Social networking"]

#31 [mh ^Blogging]

#32 [mh ^"Social media"]

#33 [mh ^"Electronic mail"]

#34 [mh ^"Cell Phones"]

#35 [mh ^"Text messaging"]

#36 [mh ^Smartphone]

#37 [mh ^"Mobile applications"]

#38 [mh ^"Wearable electronic devices"]

#39 [mh ^"Video games"]

#40 [mh ^"Virtual reality"]

#41 ((digital* or digitis* or digitiz* or electronic*) near/3 (intervention* or therap* or treatment* or medicine* or medical* or health* or monitoring or clinical* or communicat* or technol* or media* or device* or platform* or forum* or community* or communities* or discussion*)):ab

#42 (telemed* or tele-med* or telehealth* or tele-health* or telecar* or tele-car*):ab

#43 (ehealth* or e-health* or mhealth* or m-health* or mobile health*):ab

#44 ((laptop or palm or handheld or tablet or pda or pc) near/2 comput*):ab

#45 ((mobile* or cell* or tablet*) near (phone* or telephone* or handset* or hand-set*)):ab

#46 (smartphone* or smart-phone* or smart telephone* or iphone* or i-phone* or ipad* or i-pad* or blackberry* or smartwatch* or smart-watch* or android or device-based or mobile-based or podcast*):ab

#47 ((mobile or electronic* or digital*) near/2 (device* or tablet*)):ab

#48 ((mobile or electronic* or digital* or device* or software*) near/3 application*):ab

#49 (app or apps or wearable* or online* or on-line* or internet* or www or web or website* or webpage* or portal or search engine*):ab

#50 (e-mail* or email* or electronic mail*):ab

#51 (text messag* or texting or texter* or texted or SMS or short messag* or multimedia messag* or multi-media messag* or mms or instant messag* or picture messag* or audio messag*):ab

#52 (Facebook* or YouTube* or Twitter* or LinkedIn* or Pinterest* or Google* or Tumblr* or Instagram* or WhatsApp* or Reddit* or Flickr* or SnapChat* or Yahoo* or Bing* or MSN* or Wikipedia* or Web 2* or alexa or fitbit*):ab

#53 (social media* or social network* or blog* or vlog* or video-blog* or gaming or game or games or gamification or wii fit or discussion board* or online forum*):ab

#54 ((virtual or augmented) near/3 reality):ab

#55 [mh ^"Speech recognition software"]

#56 ((voice* or speech or speak*) near/3 response* near/3 (interact* or unit*)):ab,kw

#57 IVR:ab

#58 {Or #22-#57}

#59 #15 and #21 and #58 with Cochrane Library publication date from Jan 2000 to Dec 2018

#60 #15 and #21 and #58 with Publication Year from 2000 to 2018, in Trials

#61 #59 or #60

#62 "clinicaltrials.gov":so

#61 not #62

Database name: Embase

1 behavior change/ (29924)

2 health behavior/ (60216)

3 attitude to health/ or risk reduction/ (193522)

4 behavior therapy/ (40803)

5 psychotherapy/ (81493)

6 cognitive therapy/ (42716)

7 motivation/ (91547)

8 patient education/ (106043)

9 patient attitude/ (62243)

10 health promotion/ (89646)

11 Outcome assessment/ (454465)

12 ((behavio?r* or lifestyle* or "life style*") and (change* or changing or modification or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)).ti. (44133)

13 ((behavio?r* or lifestyle* or "life style*") adj2 (change* or changing or modification or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)).ab,kw. (139166)

14 motivat*.ti. (18011)

15 or/1-14 (1210134)

16 drinking behavior/ (44861)

17 alcohol consumption/ (113728)

18 exp alcohol abuse/ (34592)

19 alcohol intoxication/ (11428)

20 alcohol abstinence/ (6108)

21 exp alcoholic beverage/ (26321)

22 drunkenness/ (3118)

23 ((Alcohol* or Drunk* or Drink* or beer* or wine* or liqor* or liquor* or spirit* or alcopop* or cider*) adj4 (consum* or misus* or abus* or intoxicat* or inebriat* or excess* or bing* or hazardous or harmful or heavy or problem* or risk* or frequen* or behavio?r* or temperance or abstinence or abstain* or stop or stopping)).tw. (155169)

24 or/16-23 (260562)

25 telemedicine/ (19764)

26 computer assisted therapy/ (4465)

27 computer interface/ (29133)

28 digital computer/ (2374)

29 software design/ (570)

30 multimedia/ (3527)

31 personal digital assistant/ (1291)

32 videorecording/ (72684)

33 Internet/ (100447)

34 social network/ (13165)

35 blogging/ (250)

36 social media/ (13479)

37 e-mail/ (17791)

38 mobile phone/ (14685)

39 text messaging/ (3741)

40 smartphone/ (6955)

41 mobile application/ (7131)

42 electronic device/ (1681)

43 video game/ (2325)

44 virtual reality/ (13991)

45 ((digital* or digitis* or digitiz* or electronic*) adj3 (intervention* or therap* or treatment* or medicine* or medical* or health* or monitoring or clinical* or communicat* or technol* or media* or device* or platform* or forum* or community* or communities* or discussion*)).tw. (82088)

46 (telemed* or tele-med* or telehealth* or tele-health* or telecar* or tele-car*).tw. (16713)

47 (ehealth* or e-health* or mhealth* or m-health* or mobile health*).tw. (8000)

48 ((laptop or palm or handheld or tablet or pda or pc) adj2 comput*).tw. (3756)

49 ((mobile* or cell* or tablet*) adj (phone* or telephone* or handset* or hand-set*)).tw. (12220)

50 (smartphone* or smart-phone* or smart telephone* or iphone* or i-phone* or ipad* or i-pad* or blackberry* or smartwatch* or smart-watch* or android or device-based or mobile-based or podcast*).tw. (20608)

51 ((mobile or electronic* or digital*) adj2 (device* or tablet*)).tw. (12499)

52 ((mobile or electronic* or digital* or device* or software*) adj3 application*).tw. (14922)

53 (app or apps or wearable* or online* or on-line* or internet* or www or web or website* or webpage* or portal or search engine*).tw. (458632)

54 (e-mail* or email* or electronic mail*).tw. (28302)

55 (text messag* or texting or texter* or texted or SMS or short messag* or multimedia messag* or multi-media messag* or mms or instant messag* or picture messag* or audio messag*).tw. (17497)

56 (Facebook* or YouTube* or Twitter* or LinkedIn* or Pinterest* or Google* or Tumblr* or Instagram* or WhatsApp* or Reddit* or Flickr* or SnapChat* or Yahoo* or Bing* or MSN* or Wikipedia* or Web 2* or alexa or siri or fitbit*).tw. (60764)

57 (social media* or social network* or blog* or vlog* or video-blog* or gaming or game or games or gamification or wii fit or discussion board* or online forum*).tw. (63146)

58 ((virtual or augmented) adj3 reality).tw. (11346)

59 automatic speech recognition/ (930)

60 interactive voice response system/ (576)

61 ((voice* or speech or speak*) adj3 response* adj3 (interact* or unit*)).tw,kw. (1133)

62 IVR.tw. (1812)

63 or/25-62 (849624)

64 and/15,24,63 (3865)

65 limit 64 to yr="2000 -Current" (3778)

66 limit 65 to english language (3707)

67 nonhuman/ not human/ (4278638)

68 66 not 67 (3631)

69 limit 68 to (conference abstract or conference paper or "conference review" or editorial or letter) (772)

70 68 not 69 (2859)

Supplementary search techniques

Grey literature searching – see results below:

Search engines

Search engine	
Name	dblb computer science bibliography
URL	https://dblp.uni-trier.de/
Date searched	19/12/2018
Searcher	Andrea Heath
Search terms	“Behaviour change” AND Apps OR Digital OR Technology OR mhealth OR ehealth OR internet OR smartphone OR social media OR online OR alcohol or drinking or drunk

How the results were selected	Used search engine to perform Boolean searches on a range of selected terms (as above). Viewed results and exported potentially relevant results to Endnote if not already found in other database searches.
Results	6

Search engine	
Name	ACM Digital library
URL	https://dl.acm.org/
Date searched	19/12/2018
Searcher	Andrea Heath
Search terms	Used search engine to search “behaviour change” AND (digital OR apps OR technology OR mhealth OR ehealth OR internet OR online OR social media or smartphone) OR (alcohol or drinking or drunk). Limited to 2000 to date and Periodicals only for some results
How the results were selected	Viewed results of search combinations and exported potentially relevant results to Endnote
Results	10

Websites

Website	
Name	Public Health England
URL	www.gov.uk/government/organisations/public-health-england
Date searched	20/12/2018
Searcher	Andrea Heath
Search terms (including any specific sections browsed)	Used search box to browse PHE documents using search terms digital, apps, smartphone, technology, internet, “behaviour change”, “alcohol”, drinking”, “drunk”. Also browsed “Harmful drinking” in Health Improvement section
Results	1

Website	
Name	Public Health Wales
URL	www.wales.nhs.uk

Date searched	11/12/2018
Searcher	Andrea Heath
Search terms (including any specific sections browsed)	Browsed Lifestyle section Alcohol
Results	0

Website	
Name	Scottish Public Health Observatory
URL	www.scotpho.org.uk
Date searched	11/12/2018
Searcher	Andrea Heath
Search terms (including any specific sections browsed)	Browsed “Alcohol” in Behaviours section. Also browsed “Reported and Papers”.
Results	0

Website	
Name	Department of Health
URL	www.gov.uk/government/organisations/department-of-health
Date searched	20/12/2018
Searcher	Andrea Heath
Search terms (including any specific sections browsed)	Used search box to browse DoH documents using search terms “digital technology”, apps, smartphone, internet, “behaviour change”, alcohol, drinking, drunk. Also searched NICE Evidence Search using same key words and limiting to source (DoH) Did not include results that had already been picked up by other database searches eg HMIC
Results	1

Website	
Name	Public Health Agency (Northern Ireland)

URL	http://www.publichealth.hscni.net/
Date searched	12/12/2018
Searcher	Andrea Heath
Search terms (including any specific sections browsed)	Searched Publications using key terms – digital, apps, smartphone, technology, internet, “behaviour change, alcohol, drinking, drunkeness
Results	0

Website	
Name	Public Health Institute
URL	www.cph.org.uk
Date searched	12/12/2018
Searcher	Andrea Heath
Search terms (including any specific sections browsed)	Browsed area of expertise “Alcohol”. Also searched via “advanced Google search” terms alcohol, drinking and drunk and website url.
Results	0

Website	
Name	Royal Society for Public Health
URL	https://www.rsph.org.uk/
Date searched	12/12/2018
Searcher	Andrea Heath
Search terms (including any specific sections browsed)	Browsed Reports. Also searched via “advanced Google search” using key terms and website url
Results	0

Website

Name	Centre for Behaviour Change UCL
URL	https://www.ucl.ac.uk/behaviour-change
Date searched	20/12/2018
Searcher	Andrea Heath
Search terms (including any specific sections browsed)	Browsed website including link to Digital Health Hub. Also searched via Google advanced search combining site search with (alcohol OR drinking OR drunk)
Results	12

Website	
Name	The Kings Fund
URL	https://www.kingsfund.org.uk
Date searched	20/12/2018
Searcher	Andrea Heath
Search terms (including any specific sections browsed)	Browsed Topic “Technology and data”, searched Publications using key terms. Also searched via “advanced Google search” using key terms and website url
Results	1

Website	
Name	The Behavioural Insights Team
URL	https://www.behaviouralinsights.co.uk/
Date searched	20/12/2018
Searcher	Andrea Heath
Search terms (including any specific sections browsed)	Browsed Health category in Blogs & read potentially relevant blogs looking for links to publications. Also searched via “advanced Google search” using key terms and website url and browsed publications
Results	1

Website	
Name	nesta
URL	https://www.nesta.org.uk/
Date searched	19/12/2018
Searcher	Andrea Heath
Search terms (including any specific sections browsed)	Browsed “Health” section, used search function to search key terms (alcohol, drinking, drunk). Also searched via “advanced Google search” using key terms and website url
Results	2

Website	
Name	NICE Evidence Search
URL	www.evidence.nhs.uk
Date searched	21/12/2018
Searcher	Andrea Heath
Search terms (including any specific sections browsed)	Used searched box to perform Boolean searches combining (behaviour change or digital technology, apps, computers, smartphone, internet) AND (alcohol OR drinking OR drunk). Imported most results to Endnote. One result added to Word doc and saved on k:drive
Results	48

Website	
Name	Google
URL	Google.co.uk
Date searched	19/12/2012
Searcher	Andrea Heath
Search terms (including any specific sections browsed)	(Behaviour OR Behavior) AND ("digital technology" or apps or smartphone) AND (alcohol OR drinking OR drunk) Browsed first 50 results and copy & pasted relevant ones to search document, plus imported eight to Endnote
Results	13

Website	
Name	Google Scholar
URL	www.scholar.google.com
Date searched	19/12/2018
Searcher	Andrea Heath
Search terms (including any specific sections browsed)	(Behaviour OR Behavior) AND ("digital technology" or apps or smartphone) AND (alcohol or drinking or drunk) Browsed first 50 results and exported relevant results (if not duplicates) to Endnote
Results	11

Economic evidence

Note: a unified search for economic evidence was conducted for all review questions in this guideline

Database name: MEDLINE

1 Health Behavior/ (45965)
2 Health Knowledge, Attitudes, Practice/ (100524)
3 Risk Reduction Behavior/ (11188)
4 Behavior Therapy/ (26562)
5 PSYCHOTHERAPY/ (52164)
6 Cognitive Therapy/ (22511)
7 MOTIVATION/ (61890)
8 Patient Education as Topic/ (81150)
9 Patient acceptance of healthcare/ (41100)
10 Health promotion/ (68389)
11 "Outcome and Process Assessment (Health Care)"/ (25495)
12 ((behavio?r* or lifestyle* or "life style*") and (change* or changing or modification* or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)).ti. (31617)
13 ((behavio?r* or lifestyle* or "life style*") adj2 (change* or changing or modification* or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)).ab,kw. (88489)
14 motivat*.ti. (14483)
15 or/1-14 (535137)
16 exp EXERCISE/ (174008)
17 exp EXERCISE MOVEMENT TECHNIQUES/ (7290)

18 exp SPORTS/ (168645)
19 exp exercise therapy/ (44950)
20 ((physical* or keep* or cardio* or aerobic or fitness or increas* or more or become or becoming or be or encourag*) adj3 (fit* or activ* or train*)).ti. (60086)
21 SEDENTARY LIFESTYLE/ (7220)
22 exercis*.ti. (97711)
23 (sedentary adj3 (behavio?r* or lifestyle* or less or time or change* or changing or modification* or modify or modifying or program* or intervention*)).tw. (8381)
24 FOOD HABITS/ (76202)
25 FOOD PREFERENCES/ (13168)
26 Nutrition therapy/ (1923)
27 *DIET/ (71783)
28 Body Mass Index/ (114816)
29 Healthy diet/ (2044)
30 diet*.ti. (155010)
31 ((health* or unhealthy or poor* or chang* or behav* or advic* or recommend*) adj3 (eat* or diet* or food* or nutrition* or weight* or overweight)).tw. (129962)
32 ((fruit* or vegetable*) adj2 (intake* or consum* or eat* or ate)).tw. (12879)
33 or/16-32 (767389)
34 SMOKING/ (134671)
35 SMOKING CESSATION/ (26370)
36 "TOBACCO USE CESSATION"/ or exp "TOBACCO USE"/ or "TOBACCO USE DISORDER"/ (13229)
37 SMOKERS/ (587)
38 Electronic Nicotine Delivery Systems/ or Vaping/ (2213)
39 (ecig* or e-cig* or e-voke* or juul* or vape* or vaping*).tw. (2057)
40 "TOBACCO USE CESSATION PRODUCTS"/ (1512)
41 exp Pipe smoking/ (75)
42 (waterpipe* or water pipe* or dokha or dokhas or hookah or hookahs or hooka or hookas or shisha or shishas or sheesha or sheeshas).tw. (1453)
43 (smoking* or smoker* or antismok* or anti smok* or anti-smok*).tw. (204950)
44 (tobacco* or nicotin* or cigar* or cigs).tw. (181144)
45 or/34-44 (344859)
46 exp ALCOHOL-RELATED DISORDERS/ (108758)
47 exp ALCOHOL DRINKING/ (64438)
48 exp Alcoholic Beverages/ (18633)
49 Drinking Behavior/ (6548)
50 ((Alcohol* or Drunk* or Drink* or beer* or wine* or liqor* or liquor* or spirit* or alcopop* or cider*) adj4 (consum* or misus* or abus* or intoxicat* or inebriat* or excess* or bing* or hazardous or harmful or heavy or problem* or risk* or frequen* or behavio?r* or temperance or abstinence or abstain* or stop or stopping)).tw. (102554)
51 or/46-50 (213234)
52 exp Sexual Behavior/ (99473)
53 Sexual Health/ (397)
54 Sex education/ (8530)

55 exp Sexually Transmitted Diseases/ (323661)
56 HIV/ (18005)
57 Blood-Borne Pathogens/ (2917)
58 Pregnancy, Unplanned/ (1647)
59 Birth control/ (18923)
60 Pregnancy in Adolescence/ (7591)
61 Pregnancy Unwanted/ (2539)
62 Contraceptive Agents/ (4490)
63 Condoms/ (9681)
64 Contraceptive behavior/ (7488)
65 Condoms, Female/ (426)
66 (contracep* or condom*).tw. (73799)
67 ((sex* or intercourse or coit*) adj3 (risk* or protected or unprotected or safe* or unsafe* or behavio?r* or health* or unhealth* or educat*)).tw. (71922)
68 (STD* or STI or "sexually transmitted disease*" or "sexually transmitted infection*" or HIV*).tw. (285872)
69 (pregnan* adj3 (unplanned or planned or unwanted or unintended or unintentional* or repeat* or adolescen* or teen*)).tw. (14081)
70 (birth adj control*).tw. (4473)
71 (famil* adj3 plan*).tw. (24787)
72 or/52-71 (592222)
73 or/33,45,51,72 (1805988)
74 TELEMEDICINE/ (18725)
75 Therapy, Computer-Assisted/ (6424)
76 User-Computer Interface/ (35219)
77 Software Design/ (5745)
78 MULTIMEDIA/ (1809)
79 Computers, Handheld/ (3301)
80 Videotape Recording/ (11137)
81 Internet/ (67068)
82 Social Networking/ (2350)
83 Online Social Networking/ (16)
84 Blogging/ (897)
85 Social Media/ (5412)
86 Electronic Mail/ (2493)
87 Cell Phones/ (7642)
88 Text Messaging/ (2119)
89 Smartphone/ (2534)
90 Mobile Applications/ (3700)
91 WEARABLE ELECTRONIC DEVICES/ (754)
92 Video Games/ (4558)
93 Virtual Reality/ (636)
94 ((digital* or digitis* or digitiz* or electronic*) adj3 (intervention* or therap* or treatment* or medicine* or medical* or health* or monitoring or clinical* or communicat* or technol* or

media* or device* or platform* or forum* or community* or communities* or discussion*)).tw. (41380)
95 (telemed* or tele-med* or telehealth* or tele-health* or telecar* or tele-car*).tw. (10768)
96 (ehealth* or e-health* or mhealth* or m-health* or mobile health*).tw. (4993)
97 ((laptop or palm or handheld or tablet or pda or pc) adj2 comput*).tw. (2388)
98 ((mobile* or cell* or tablet*) adj (phone* or telephone* or handset* or hand-set*)).tw. (7450)
99 (smartphone* or smart-phone* or smart telephone* or iphone* or i-phone* or ipad* or i-pad* or blackberry* or smartwatch* or smart-watch* or android or device-based or mobile-based or podcast*).tw. (9457)
100 ((mobile or electronic* or digital*) adj2 (device* or tablet*)).tw. (6537)
101 ((mobile or electronic* or digital* or device* or software*) adj3 application*).tw. (8487)
102 (app or apps or wearable* or online* or on-line* or internet* or www or web or website* or webpage* or portal or search engine*).tw. (279509)
103 (e-mail* or email* or electronic mail*).tw. (11476)
104 (text messag* or texting or texter* or texted or SMS or short messag* or multimedia messag* or multi-media messag* or mms or instant messag* or picture messag* or audio messag*).tw. (10318)
105 (Facebook* or YouTube* or Twitter* or LinkedIn* or Pinterest* or Google* or Tumblr* or Instagram* or WhatsApp* or Reddit* or Flickr* or SnapChat* or Yahoo* or Bing* or MSN* or Wikipedia* or Web 2* or alexa or siri or fitbit*).tw. (33899)
106 (social media* or social network* or blog* or vlog* or video-blog* or gaming or game or games or gamification or wii fit or discussion board* or online forum*).tw. (41146)
107 ((virtual or augmented) adj3 reality).tw. (6719)
108 Speech Recognition Software/ (648)
109 ((voice* or speech or speak*) adj3 response* adj3 (interact* or unit*)).tw,kw. (705)
110 IVR.tw. (944)
111 or/74-110 (492045)
112 and/15,73,111 (12571)
113 Economics/ or exp "Costs and Cost Analysis"/ or Economics, Dental/ or exp Economics, Hospital/ or exp Economics, Medical/ or Economics, Nursing/ or Economics, Pharmaceutical/ or Budgets/ or exp Models, Economic/ or Markov Chains/ or Monte Carlo Method/ or Decision Trees/ (325711)
114 (Economic* or cost or costs or costly or costing or costed or price or prices or pricing or pharmacoeconomic* or pharmaco economic* or budget*).ti,ab. (591398)
115 ((monte adj carlo) or markov or (decision adj2 (tree* or analys*))).ti,ab. (49362)
116 (value adj2 (money or monetary)).ti,ab. (1766)
117 Quality of Life/ or Health Status Indicators/ or Quality-Adjusted Life Years/ or Value of Life/ (201539)
118 (quality of life or quality adjusted life or qaly* or qald* or qale* or qtime* or quality of wellbeing or quality of well-being or willingness to pay or standard gamble* or time trade off* or time tradeoff*).ti,ab. (205307)
119 (disability adjusted life or daly).ti,ab. (2537)
120 health* year* equivalent*.ti,ab. (38)

121 (sf36 or sf 36 or short form 36 or shortform 36 or sf thirtysix or sf thirty six or shortform thirtysix or shortform thirty six or short form thirtysix or short form thirty six).ti,ab. (20533)
122 (sf6 or sf 6 or short form 6 or shortform 6 or sf six or sfsix or shortform six or short form six).ti,ab. (1222)
123 (sf12 or sf 12 or short form 12 or shortform 12 or sf twelve or sftwelve or shortform twelve or short form twelve).ti,ab. (4252)
124 (sf16 or sf 16 or short form 16 or shortform 16 or sf sixteen or sfsixteen or shortform sixteen or short form sixteen).ti,ab. (27)
125 (sf20 or sf 20 or short form 20 or shortform 20 or sf twenty or sftwenty or shortform twenty or short form twenty).ti,ab. (364)
126 (euroqol or euro qol or eq5d or eq 5d).ti,ab. (7253)
127 or/113-126 (1022455)
128 (((energy or oxygen) adj cost*) or (metabolic adj cost*) or ((energy or oxygen) adj expenditure*)).ti,ab. (25248)
129 127 not 128 (1015741)
130 112 and 129 (1997)
131 limit 130 to yr="2000 -Current" (1930)
132 limit 131 to english language (1877)
133 Animals/ not Humans/ (4506319)
134 132 not 133 (1867)
135 limit 134 to (clinical conference or comment or editorial or historical article or letter or news) (6)
136 134 not 135 (1861)

Database name: MIP/Epubs

1 ((behavio?r* or lifestyle* or "life style*") and (change* or changing or modification* or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)).ti. (5835)
2 ((behavio?r* or lifestyle* or "life style*") adj2 (change* or changing or modification* or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)).ab. (17570)
3 motivat*.ti. (2478)
4 or/1-3 (22736)
5 ((physical* or keep* or cardio* or aerobic or fitness or increas* or more or become or becoming or be or encourag*) adj3 (fit* or activ* or train*)).ti. (10100)
6 exercis*.ti. (12653)
7 (sedentary adj3 (behavio?r* or lifestyle* or less or time or change* or changing or modification* or modify or modifying or program* or intervention*)).tw. (2011)
8 diet*.ti. (18984)
9 ((health* or unhealthy or poor* or chang* or behav* or advic* or recommend*) adj3 (eat* or diet* or food* or nutrition* or weight* or overweight)).tw. (21928)
10 ((fruit* or vegetable*) adj2 (intake* or consum* or eat* or ate)).tw. (2112)
11 or/5-10 (60183)

12 (ecig* or e-cig* or e-voke* or juul* or vape* or vaping*).tw. (1052)
13 (waterpipe* or water pipe* or dokha or dokhas or hookah or hookahs or hooka or hookas or shisha or shishas or sheesha or sheeshas).tw. (483)
14 (smoking* or smoker* or antismok* or anti smok* or anti-smok*).tw. (25197)
15 (tobacco* or nicotin* or cigar* or cigs).tw. (21826)
16 or/12-15 (39043)
17 ((Alcohol* or Drunk* or Drink* or beer* or wine* or liqor* or liquor* or spirit* or alcopop* or cider*) adj4 (consum* or misus* or abus* or intoxicat* or inebriat* or excess* or bing* or hazardous or harmful or heavy or problem* or risk* or frequen* or behavio?r* or temperance or abstinence or abstain* or stop or stopping)).tw. (12511)
18 (contracep* or condom*).tw. (5959)
19 ((sex* or intercourse or coit*) adj3 (risk* or protected or unprotected or safe* or unsafe* or behavio?r* or health* or unhealth* or educat*)).tw. (10438)
20 (STD* or STI or "sexually transmitted disease*" or "sexually transmitted infection*" or HIV*).tw. (31223)
21 (pregnan* adj3 (unplanned or planned or unwanted or unintended or unintentional* or repeat* or adolescen* or teen*)).tw. (1632)
22 (birth adj control*).tw. (388)
23 (famil* adj3 plan*).tw. (2532)
24 or/18-23 (45570)
25 or/11,16-17,24 (148454)
26 ((digital* or digitis* or digitiz* or electronic*) adj3 (intervention* or therap* or treatment* or medicine* or medical* or health* or monitoring or clinical* or communicat* or technol* or media* or device* or platform* or forum* or community* or communities* or discussion*)).tw. (16498)
27 (telemed* or tele-med* or telehealth* or tele-health* or telecar* or tele-car*).tw. (1976)
28 (ehealth* or e-health* or mhealth* or m-health* or mobile health*).tw. (2199)
29 ((laptop or palm or handheld or tablet or pda or pc) adj2 comput*).tw. (480)
30 ((mobile* or cell* or tablet*) adj (phone* or telephone* or handset* or hand-set*)).tw. (2400)
31 (smartphone* or smart-phone* or smart telephone* or iphone* or i-phone* or ipad* or i-pad* or blackberry* or smartwatch* or smart-watch* or android or device-based or mobile-based or podcast*).tw. (5555)
32 ((mobile or electronic* or digital*) adj2 (device* or tablet*)).tw. (5858)
33 ((mobile or electronic* or digital* or device* or software*) adj3 application*).tw. (7401)
34 (app or apps or wearable* or online* or on-line* or internet* or www or web or website* or webpage* or portal or search engine*).tw. (69069)
35 (e-mail* or email* or electronic mail*).tw. (3056)
36 (text messag* or texting or texter* or texted or SMS or short messag* or multimedia messag* or multi-media messag* or mms or instant messag* or picture messag* or audio messag*).tw. (2488)
37 (Facebook* or YouTube* or Twitter* or LinkedIn* or Pinterest* or Google* or Tumblr* or Instagram* or WhatsApp* or Reddit* or Flickr* or SnapChat* or Yahoo* or Bing* or MSN* or Wikipedia* or Web 2* or alexa or fitbit*).tw. (10560)

38 (social media* or social network* or blog* or vlog* or video-blog* or gaming or game or games or gamification or wii fit or discussion board* or online forum*).tw. (12606)
39 ((virtual or augmented) adj3 reality).tw. (2107)
40 ((voice* or speech or speak*) adj3 response* adj3 (interact* or unit*)).tw. (98)
41 IVR.tw. (320)
42 or/26-41 (116943)
43 and/4,25,42 (1103)
44 25 and 42 (10238)
45 limit 44 to yr="2017 -Current" (6808)
46 43 or 45 (7192)
47 (Economic* or cost or costs or costly or costing or costed or price or prices or pricing or pharmacoeconomic* or pharmaco economic* or budget*).ti,ab. (126735)
48 ((monte adj carlo) or markov or (decision adj2 (tree* or analys*))).ti,ab. (21570)
49 (value adj2 (money or monetary)).ti,ab. (338)
50 (quality of life or quality adjusted life or qaly* or qald* or qale* or qtime* or quality of wellbeing or quality of well-being or willingness to pay or standard gamble* or time trade off* or time tradeoff*).ti,ab. (39946)
51 (disability adjusted life or daly).ti,ab. (571)
52 health* year* equivalent*.ti,ab. (2)
53 (sf36 or sf 36 or short form 36 or shortform 36 or sf thirtysix or sf thirty six or shortform thirtysix or shortform thirty six or short form thirtysix or short form thirty six).ti,ab. (2807)
54 (sf6 or sf 6 or short form 6 or shortform 6 or sf six or sfsix or shortform six or short form six).ti,ab. (716)
55 (sf12 or sf 12 or short form 12 or shortform 12 or sf twelve or sftwelve or shortform twelve or short form twelve).ti,ab. (795)
56 (sf16 or sf 16 or short form 16 or shortform 16 or sf sixteen or sfsixteen or shortform sixteen or short form sixteen).ti,ab. (5)
57 (sf20 or sf 20 or short form 20 or shortform 20 or sf twenty or sftwenty or shortform twenty or short form twenty).ti,ab. (22)
58 (euroqol or euro qol or eq5d or eq 5d).ti,ab. (1768)
59 or/47-58 (182507)
60 (((energy or oxygen) adj cost*) or (metabolic adj cost*) or ((energy or oxygen) adj expenditure*)).ti,ab. (3669)
61 59 not 60 (181259)
62 46 and 61 (959)
63 limit 62 to yr="2000 -Current" (959)
64 limit 63 to english language (953)
65 limit 64 to (clinical conference or comment or editorial or historical article or letter or news) (0)
66 64 not 65 (953)

Database name: Embase

1 behavior change/ (30212)
2 health 79nglish7979/ (60586)

3 attitude to health/ or risk reduction/ (195169)
4 behavior therapy/ (40905)
5 psychotherapy/ (81847)
6 cognitive therapy/ (42796)
7 motivation/ (92282)
8 patient education/ (106609)
9 patient attitude/ (62747)
10 health promotion/ (90169)
11 Outcome assessment/ (459747)
12 ((behavio?r* or lifestyle* or “life style*”) and (change* or changing or modification* or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)).ti. (44885)
13 ((behavio?r* or lifestyle* or “life style*”) adj2 (change* or changing or modification* or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)).ab,kw. (144310)
14 motivat*.ti. (18165)
15 or/1-14 (1224078)
16 exp exercise/ (303603)
17 exp kinesiotherapy/ (69470)
18 exp sport/ (145038)
19 ((physical* or keep* or cardio* or aerobic or fitness or 80nglish80* or more or become or becoming or be or 80nglish8080*) adj3 (fit* or 80nglis* or train*)).ti. (83120)
20 sedentary lifestyle/ or sitting/ (30759)
21 physical activity/ (135422)
22 exercis*.ti. (132758)
23 (sedentary adj3 (behavio?r* or lifestyle* or less or time or change* or changing or modification* or modify or modifying or program* or intervention*)).tw. (13654)
24 feeding 80nglish8080/ or Food intake/ or Portion size/ (179314)
25 food preference/ (12426)
26 diet therapy/ (48807)
27 *diet/ (65042)
28 unhealthy diet/ or healthy diet/ (2365)
29 body mass/ (366272)
30 diet*.ti. (191322)
31 ((health* or unhealthy or poor* or chang* or 80nglis* or 80nglis* or recommend*) adj3 (eat* or diet* or food* or nutrition* or weight* or overweight)).tw. (200415)
32 ((fruit* or vegetable*) adj2 (intake* or consum* or eat* or ate)).tw. (19034)
33 or/16-32 (1387258)
34 smoking/ (277521)
35 smoking cessation/ (53791)
36 smoking habit/ (21151)
37 cigarette smoking/ or cigar smoking/ (51706)
38 exp “tobacco use”/ or tobacco dependence/ (366278)
39 smoking cessation program/ or smoking reduction/ (3105)
40 “smoking and smoking related phenomena”/ (180)

41 electronic cigarette/ or vaping/ or pipe smoking/ (4551)
42 (ecig* or e-cig* or e-voke* or juul* or vape* or vaping*).tw. (3494)
43 (waterpipe* or water pipe* or dokha or dokhas or hookah or hookahs or hooka or hookas or shisha or shishas or sheesha or sheeshas).tw. (2308)
44 (smoking* or smoker* or antismok* or anti smok* or anti-smok*).tw. (332911)
45 (tobacco* or nicotin* or cigar* or cigs).tw. (236781)
46 or/34-45 (559889)
47 drinking 81nglish8181/ (45140)
48 alcohol consumption/ (114518)
49 exp alcohol abuse/ (34844)
50 alcohol intoxication/ (11483)
51 alcohol abstinence/ (6164)
52 exp alcoholic beverage/ or alcohol/ (256320)
53 drunkenness/ (3118)
54 ((Alcohol* or Drunk* or Drink* or beer* or wine* or liqor* or liquor* or spirit* or alcopop* or cider*) adj4 (consum* or misus* or abus* or intoxicat* or inebriat* or excess* or bing* or hazardous or harmful or heavy or problem* or risk* or frequen* or behavio?r* or temperance or abstinence or abstain* or stop or stopping)).tw. (155984)
55 or/47-54 (426009)
56 exp sexual 81nglish8181/ (193908)
57 sexual health/ (13872)
58 sexual education/ (10789)
59 exp sexually transmitted disease/ (82663)
60 Human immunodeficiency virus/ (107533)
61 bloodborne bacterium/ (1919)
62 unplanned pregnancy/ (4958)
63 birth control/ (3680)
64 adolescent pregnancy/ (9109)
65 unwanted pregnancy/ (3097)
66 contraceptive agent/ (17643)
67 condom/ (19065)
68 contraceptive 81nglish8181/ (3665)
69 female condom/ (331)
70 (81nglish8181t* or condom*).tw. (92337)
71 ((sex* or intercourse or coit*) adj3 (risk* or protected or unprotected or safe* or unsafe* or behavio?r* or health* or unhealth* or educat*)).tw. (108297)
72 (STD* or STI or “sexually transmitted disease*” or “sexually transmitted infection*” or HIV*).tw. (403110)
73 (pregnan* adj3 (unplanned or planned or unwanted or unintended or unintentional* or repeat* or adolescen* or teen*)).tw. (19148)
74 (birth adj control*).tw. (4414)
75 (famil* adj3 plan*).tw. (25694)
76 or/56-75 (763969)
77 or/33,46,55,76 (2864133)
78 telemedicine/ (20032)

79 computer assisted therapy/ (4478)
80 computer interface/ (29361)
81 digital computer/ (2380)
82 software design/ (586)
83 multimedia/ (3553)
84 personal digital assistant/ (1301)
85 videorecording/ (73411)
86 Internet/ (101111)
87 social network/ (13368)
88 blogging/ (257)
89 social media/ (13901)
90 e-mail/ (17996)
91 mobile phone/ (14846)
92 text messaging/ (3838)
93 smartphone/ (7244)
94 mobile application/ (7400)
95 electronic device/ (1838)
96 video game/ (2420)
97 virtual reality/ (14185)
98 ((digital* or digitis* or digitiz* or electronic*) adj3 (intervention* or therap* or treatment* or medicine* or medical* or health* or monitoring or clinical* or communicat* or technol* or media* or device* or platform* or forum* or community* or communities* or discussion*)).tw. (83470)
99 (telemed* or tele-med* or telehealth* or tele-health* or 82nglish82* or tele-car*).tw. (16924)
100 (ehealth* or e-health* or mhealth* or m-health* or mobile health*).tw. (8205)
101 ((laptop or palm or handheld or tablet or pda or pc) adj2 comput*).tw. (3795)
102 ((mobile* or cell* or tablet*) adj (phone* or telephone* or handset* or hand-set*)).tw. (12384)
103 (smartphone* or smart-phone* or smart telephone* or iphone* or i-phone* or ipad* or i-pad* or blackberry* or smartwatch* or smart-watch* or android or device-based or mobile-based or podcast*).tw. (21092)
104 ((mobile or electronic* or digital*) adj2 (device* or tablet*)).tw. (12736)
105 ((mobile or electronic* or digital* or device* or software*) adj3 application*).tw. (15189)
106 (app or apps or wearable* or online* or on-line* or internet* or www or web or website* or webpage* or portal or search engine*).tw. (464892)
107 (e-mail* or email* or electronic mail*).tw. (28650)
108 (text messag* or texting or texter* or texted or SMS or short messag* or multimedia messag* or multi-media messag* or mms or instant messag* or picture messag* or audio messag*).tw. (17696)
109 (Facebook* or YouTube* or Twitter* or LinkedIn* or Pinterest* or Google* or Tumblr* or Instagram* or WhatsApp* or Reddit* or Flickr* or SnapChat* or Yahoo* or Bing* or MSN* or Wikipedia* or Web 2* or alexa or siri or fitbit*).tw. (61766)
110 (social media* or social network* or blog* or vlog* or video-blog* or gaming or game or games or gamification or wii fit or discussion board* or online forum*).tw. (64114)

111 ((virtual or augmented) adj3 reality).tw. (11530)
112 automatic speech recognition/ (941)
113 interactive voice response system/ (577)
114 ((voice* or speech or speak*) adj3 response* adj3 (interact* or unit*)).tw,kw. (1138)
115 IVR.tw. (1818)
116 or/78-115 (860579)
117 and/15,77,116 (23998)
118 health-economics/ or exp economic-evaluation/ or exp health-care-cost/ or pharmacoeconomics/ or Monte Carlo Method/ or Decision Tree/ (541174)
119 (Economic* or cost or costs or costly or costing or costed or price or prices or pricing or pharmacoeconomic* or pharmaco economic* or budget*).ti,ab. (928134)
120 ((monte adj carlo) or markov or (decision adj2 (tree* or analys*))).ti,ab. (77974)
121 (value adj2 (money or monetary)).ti,ab. (2925)
122 Quality of Life/ or Quality Adjusted Life Year/ or Quality of Life Index/ or Short Form 36/ or Health Status/ (535533)
123 (quality of life or quality adjusted life or qaly* or qald* or qale* or qtime* or quality of wellbeing or quality of well-being or willingness to pay or standard gamble* or time trade off* or time tradeoff*).ti,ab. (385660)
124 (disability adjusted life or daly).ti,ab. (3883)
125 Health* year* equivalent*.ti,ab. (40)
126 (sf36 or sf 36 or short form 36 or shortform 36 or sf thirtysix or sf thirty six or shortform thirtysix or shortform thirty six or short form thirtysix or short form thirty six or sf6 or sf 6 or short form 6 or shortform 6 or sf six or sfsix or shortform six or short form six or sf12 or sf 12 or short form 12 or shortform 12 or sf twelve or sftwelve or shortform twelve or short form twelve or sf16 or sf 16 or short form 16 or shortform 16 or sf sixteen or sfsixteen or shortform sixteen or short form sixteen or sf20 or sf 20 or short form 20 or shortform 20 or sf twenty or sftwenty or shortform twenty or short form twenty or euroqol or euro qol or eq5d or eq 5d).ti,ab. (61852)
127 or/118-126 (1743470)
128 (((energy or oxygen) adj cost*) or (metabolic adj cost*) or ((energy or oxygen) adj expenditure*)).ti,ab. (35250)
129 127 not 128 (1734611)
130 117 and 129 (4845)
131 limit 130 to yr=”2000 -Current” (4793)
132 limit 131 to 83nglish language (4708)
133 exp animal/ or exp animal-experiment/ or nonhuman/ (25358585)
134 (rat or rats or mouse or mice or hamster or hamsters or animal or animals or dog or dogs or cat or cats or bovine or sheep).ti,ab,sh. (5378979)
135 exp human/ or human-experiment/ (19263219)
136 133 or 134 (25494592)
137 136 not (136 and 135) (6232240)
138 (comment or editorial or letter or news).pt. (1648938)
139 137 or 138 (7818751)
140 132 not 139 (4617)
141 limit 140 to (conference abstract or conference paper or “conference review”) (1044)

142 140 not 141 (3573)

Database name: HTA/NHS EED

1 MeSH DESCRIPTOR Health Behavior
2 MeSH DESCRIPTOR Health Knowledge, Attitudes, Practice
3 MeSH DESCRIPTOR Risk Reduction Behavior
4 MeSH DESCRIPTOR Behavior Therapy
5 MeSH DESCRIPTOR PSYCHOTHERAPY
6 MeSH DESCRIPTOR Cognitive Therapy
7 MeSH DESCRIPTOR MOTIVATION
8 MeSH DESCRIPTOR Patient Education as Topic
9 MeSH DESCRIPTOR Patient Acceptance of Health Care
10 MeSH DESCRIPTOR Health promotion
11 MeSH DESCRIPTOR Outcome and Process Assessment (Health Care)
12 (behavio?r* or lifestyle* or "life style*") AND (change* or changing or modification* or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)
13 (motivat*):TI
14 #1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13
15 MeSH DESCRIPTOR Exercise EXPLODE ALL TREES
16 MeSH DESCRIPTOR Exercise Movement Techniques EXPLODE ALL TREES
17 MeSH DESCRIPTOR Sports EXPLODE ALL TREES
18 MeSH DESCRIPTOR Exercise therapy EXPLODE ALL TREES
19 (physical* or keep* or cardio* or aerobic or fitness or increas* or more or become or becoming or be or encourag*):TI AND (fit* or activ* or train*):TI
20 MeSH DESCRIPTOR Sedentary Lifestyle
21 (exercis*):TI
22 (sedentary) AND (behavio?r* or lifestyle* or less or time or change* or changing or modification* or modify or modifying or program* or intervention*)
23 MeSH DESCRIPTOR Feeding Behavior
24 MeSH DESCRIPTOR FOOD PREFERENCES
25 MeSH DESCRIPTOR Nutrition therapy
26 MeSH DESCRIPTOR Diet
27 MeSH DESCRIPTOR body mass index
28 MeSH DESCRIPTOR healthy diet
29 (diet*):TI
30 (health* or unhealthy or poor* or chang* or behav* or advic* or recommend*) AND (eat* or diet* or food* or nutrition* or weight* or overweight)
31 (fruit* or vegetable*) AND (intake* or consum* or eat* or ate)
32 #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31
33 MeSH DESCRIPTOR Smoking

34 MeSH DESCRIPTOR Smoking cessation
35 MeSH DESCRIPTOR Tobacco use cessation
36 MeSH DESCRIPTOR Tobacco use EXPLODE ALL TREES
37 MeSH DESCRIPTOR Tobacco use disorder
38 MeSH DESCRIPTOR vaping EXPLODE ALL TREES
39 (ecig* or e-cig* or e-voke* or juul* or vape* or vaping*)
40 MeSH DESCRIPTOR tobacco use cessation products
41 (waterpipe* or water pipe* or dokha or dokhas or hookah or hookahs or hooka or hookas or shisha or shishas or sheesha or sheeshas)
42 (smoking* or smoker* or antismok* or anti smok* or anti-smok*)
43 (tobacco* or nicotin* or cigar* or cigs)
44 #33 OR #34 OR #35 OR #36 OR #37 OR #38 OR #39 OR #40 OR #41 OR #42 OR #43
45 MeSH DESCRIPTOR Alcohol-related disorders EXPLODE ALL TREES
46 MeSH DESCRIPTOR Alcohol drinking EXPLODE ALL TREES
47 MeSH DESCRIPTOR Alcoholic beverages EXPLODE ALL TREES
48 MeSH DESCRIPTOR drinking behavior
49 (Alcohol* or Drunk* or Drink* or beer* or wine* or liqor* or liquor* or spirit* or alcopop* or cider*) AND (consum* or misus* or abus* or intoxicat* or inebriat* or excess* or bing* or hazardous or harmful or heavy or problem* or risk* or frequen* or behavio?r* or temperance or abstinence or abstain* or stop or stopping)
50 #45 OR #46 OR #47 OR #48 OR #49
51 MeSH DESCRIPTOR sexual behavior EXPLODE ALL TREES
52 MeSH DESCRIPTOR reproductive behavior EXPLODE ALL TREES
53 MeSH DESCRIPTOR sex education
54 MeSH DESCRIPTOR sexually transmitted diseases EXPLODE ALL TREES
55 MeSH DESCRIPTOR HIV
56 MeSH DESCRIPTOR blood-borne pathogens
57 MeSH DESCRIPTOR pregnancy, unplanned
58 MeSH DESCRIPTOR contraception EXPLODE ALL TREES
59 MeSH DESCRIPTOR pregnancy in adolescence
60 MeSH DESCRIPTOR pregnancy, unwanted
61 MeSH DESCRIPTOR contraceptive agents
62 MeSH DESCRIPTOR condoms
63 MeSH DESCRIPTOR condoms, female
64 MeSH DESCRIPTOR contraception behavior EXPLODE ALL TREES
65 (contracep* or condom*)
66 (STD* or STI or "sexually transmitted disease*" or "sexually transmitted infection*" or HIV*)
67 (sex* or intercourse or coit*) AND (risk* or protected or unprotected or safe* or unsafe* or behavio?r* or health* or unhealth* or educat*)
68 (pregnan*) AND (unplanned or planned or unwanted or unintended or unintentional* or repeat* or adolescen* or teen*)
69 (birth) AND (control*)
70 (famil*) AND (plan*)

71 #51 OR #52 OR #53 OR #54 OR #55 OR #56 OR #57 OR #58 OR #59 OR #60 OR #61 OR #62 OR #63 OR #64 OR #65 OR #66 OR #67 OR #68 OR #69 OR #70
72 #32 OR #44 OR #50 OR #71
73 MeSH DESCRIPTOR Telemedicine
74 MeSH DESCRIPTOR Therapy, Computer-Assisted
75 MeSH DESCRIPTOR User-Computer Interface
76 MeSH DESCRIPTOR Software design
77 MeSH DESCRIPTOR Multimedia
78 MeSH DESCRIPTOR Computers, Handheld
79 MeSH DESCRIPTOR Videotape Recording
80 MeSH DESCRIPTOR Internet
81 MeSH DESCRIPTOR Social Networking
82 MeSH DESCRIPTOR Blogging
83 MeSH DESCRIPTOR social media
84 MeSH DESCRIPTOR Electronic Mail
85 MeSH DESCRIPTOR cell phones
86 MeSH DESCRIPTOR text messaging
87 MeSH DESCRIPTOR Smartphone
88 MeSH DESCRIPTOR Mobile Applications
89 MeSH DESCRIPTOR Video games
90 MeSH DESCRIPTOR Virtual Reality Exposure Therapy
91 ((digital* or digitis* or digitiz* or electronic*)) AND ((intervention* or therap* or treatment* or medicine* or medical* or health* or monitoring or clinical* or communicat* or technol* or media* or device* or platform* or forum* or community* or communities* or discussion*))
92 ((telemed* or tele-med* or telehealth* or tele-health* or telecar* or tele-car*))
93 ((ehealth* or e-health* or mhealth* or m-health* or mobile health*))
94 ((laptop or palm or handheld or tablet or pda or pc)) AND (comput*)
95 ((mobile* or cell* or tablet*)) AND ((phone* or telephone* or handset* or hand-set*))
96 ((smartphone* or smart-phone* or smart telephone* or iphone* or i-phone* or ipad* or i-pad* or blackberry* or smartwatch* or smart-watch* or android or device-based or mobile-based or podcast*))
97 ((mobile or electronic* or digital*)) AND ((device* or tablet*))
98 ((mobile or electronic* or digital* or device* or software*)) AND (application*)
99 ((app or apps or wearable* or online* or on-line* or internet* or www or web or website* or webpage* or portal or search engine*))
100 ((e-mail* or email* or electronic mail*))
101 ((text messag* or texting or texter* or texted or SMS or short messag* or multimedia messag* or multi-media messag* or mms or instant messag* or picture messag* or audio messag*))
102 ((Facebook* or YouTube* or Twitter* or LinkedIn* or Pinterest* or Google* or Tumblr* or Instagram* or WhatsApp* or Reddit* or Flickr* or SnapChat* or Yahoo* or Bing* or MSN* or Wikipedia* or Web 2* or alexa or siri or fitbit*))
103 ((social media* or social network* or blog* or vlog* or video-blog* or gaming or game or games or gamification or wii fit or discussion board* or online forum*))
104 ((virtual or augmented)) AND (reality)

105 MeSH DESCRIPTOR Speech Recognition Software
106 ((voice* or speech or speak*)) AND (response*) AND ((interact* or unit*))
107 (IVR)
108 #73 OR #74 OR #75 OR #76 OR #77 OR #78 OR #79 OR #80 OR #81 OR #82 OR #83 OR #84 OR #85 OR #86 OR #87 OR #88 OR #89 OR #90 OR #91 OR #92 OR #93 OR #94 OR #95 OR #96 OR #97 OR #98 OR #99 OR #100 OR #101 OR #102 OR #103 OR #104 OR #105 OR #106 OR #107
109 #14 AND #72 AND #108
110 (#109) IN NHSEED, HTA FROM 2000 TO 2019

Database name: Econlit

1 ((behavio?r* or lifestyle* or "life style*") and (change* or changing or modification* or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)).ti. (1335)
2 ((behavio?r* or lifestyle* or "life style*") adj2 (change* or changing or modification* or modify or modifying or therapy or therapies or program* or intervention* or technique* or establish* or individual*)).ab. (4267)
3 motivat*.ti. (2385)
4 or/1-3 (7713)
5 ((physical* or keep* or cardio* or aerobic or fitness or increas* or more or become or becoming or be or encourag*) adj3 (fit* or activ* or train*)).ti. (313)
6 exercis*.ti. (982)
7 (sedentary adj3 (behavio?r* or lifestyle* or less or time or change* or changing or modification* or modify or modifying or program* or intervention*)).tw. (30)
8 diet*.ti. (589)
9 ((health* or unhealthy or poor* or chang* or behav* or advic* or recommend*) adj3 (eat* or diet* or food* or nutrition* or weight* or overweight)).tw. (3617)
10 ((fruit* or vegetable*) adj2 (intake* or consum* or eat* or ate)).tw. (140)
11 or/5-10 (5350)
12 (ecig* or e-cig* or e-voke* or juul* or vape* or vaping*).tw. (26)
13 (waterpipe* or water pipe* or dokha or dokhas or hookah or hookahs or hooka or hookas or shisha or shishas or sheesha or sheeshas).tw. (18)
14 (smoking* or smoker* or antismok* or anti smok* or anti-smok*).tw. (2028)
15 (tobacco* or nicotin* or cigar* or cigs).tw. (2513)
16 or/12-15 (3638)
17 ((Alcohol* or Drunk* or Drink* or beer* or wine* or liqor* or liquor* or spirit* or alcopop* or cider*) adj4 (consum* or misus* or abus* or intoxicat* or inebriat* or excess* or bing* or hazardous or harmful or heavy or problem* or risk* or frequen* or behavio?r* or temperance or abstinence or abstain* or stop or stopping)).tw. (1658)
18 (contracep* or condom*).tw. (1206)
19 ((sex* or intercourse or coit*) adj3 (risk* or protected or unprotected or safe* or unsafe* or behavio?r* or health* or unhealth* or educat*)).tw. (936)

20 (STD* or STI or "sexually transmitted disease*" or "sexually transmitted infection*" or HIV*).tw. (2056)
21 (pregnan* adj3 (unplanned or planned or unwanted or unintended or unintentional* or repeat* or adolescen* or teen*)).tw. (280)
22 (birth adj control*).tw. (191)
23 (famil* adj3 plan*).tw. (959)
24 or/18-23 (4585)
25 or/11,16-17,24 (14591)
26 ((digital* or digitis* or digitiz* or electronic*) adj3 (intervention* or therap* or treatment* or medicine* or medical* or health* or monitoring or clinical* or communicat* or technol* or media* or device* or platform* or forum* or community* or communities* or discussion*)).tw. (1567)
27 (telemed* or tele-med* or telehealth* or tele-health* or telecar* or tele-car*).tw. (50)
28 (ehealth* or e-health* or mhealth* or m-health* or mobile health*).tw. (61)
29 ((laptop or palm or handheld or tablet or pda or pc) adj2 comput*).tw. (62)
30 ((mobile* or cell* or tablet*) adj (phone* or telephone* or handset* or hand-set*)).tw. (1151)
31 (smartphone* or smart-phone* or smart telephone* or iphone* or i-phone* or ipad* or i-pad* or blackberry* or smartwatch* or smart-watch* or android or device-based or mobile-based or podcast*).tw. (342)
32 ((mobile or electronic* or digital*) adj2 (device* or tablet*)).tw. (218)
33 ((mobile or electronic* or digital* or device* or software*) adj3 application*).tw. (346)
34 (app or apps or wearable* or online* or on-line* or internet* or www or web or website* or webpage* or portal or search engine*).tw. (15934)
35 (e-mail* or email* or electronic mail*).tw. (528)
36 (text messag* or texting or texter* or texted or SMS or short messag* or multimedia messag* or multi-media messag* or mms or instant messag* or picture messag* or audio messag*).tw. (263)
37 (Facebook* or YouTube* or Twitter* or LinkedIn* or Pinterest* or Google* or Tumblr* or Instagram* or WhatsApp* or Reddit* or Flickr* or SnapChat* or Yahoo* or Bing* or MSN* or Wikipedia* or Web 2* or alexa or fitbit*).tw. (1824)
38 (social media* or social network* or blog* or vlog* or video-blog* or gaming or game or games or gamification or wii fit or discussion board* or online forum*).tw. (36084)
39 ((virtual or augmented) adj3 reality).tw. (78)
40 ((voice* or speech or speak*) adj3 response* adj3 (interact* or unit*)).tw. (6)
41 IVR.tw. (8)
42 or/26-41 (54807)
43 and/4,25,42 (20)
44 limit 43 to yr="2000 -Current" (19)

Appendix F – Public health evidence tables

Bertholet 2015

<table>
<tr><td>Bibliographic reference/s</td><td>Bertholet N; Cunningham J A; Faouzi M; Gaume J; Gmel G; Burnand B; Daeppen J B. Internet-based brief intervention for young men with unhealthy alcohol use: a randomized controlled trial in a general population sample. 2015 110(11):1735-1743.</td></tr>
<tr><td>Study name</td><td>Internet-based brief intervention for young men with unhealthy alcohol use: a randomized controlled trial in a general population sample</td></tr>
<tr><td>Registration</td><td>135538 Swiss National Science Foundation</td></tr>
<tr><td>Study type</td><td>RCT</td></tr>
<tr><td>Study dates</td><td>June 2012 to February 2013</td></tr>
<tr><td>Objective</td><td>To investigate the effect of an internet-based brief intervention among 21-year-old men with unhealthy alcohol use.</td></tr>
<tr><td>Country/ Setting</td><td>Switzerland</td></tr>
<tr><td>Number of participants / clusters</td><td>737 (n=367 for intervention; n=370 for control)</td></tr>
<tr><td>Attrition</td><td>During the C-SURF recruitment period, 15,074 attended the recruitment centres. 13,245 were approached by the study team and 5,990 agreed to participate in the project. 4,365 were approached to participate in the internet trial, 737 reported unhealthy alcohol use.</td></tr>
<tr><td>Participant /community characteristics.</td><td>
<table>
<tr><td></td><td>intervention</td><td>control</td></tr>
<tr><td>Age</td><td>20.7 (1.17)</td><td>20.8 (1.06)</td></tr>
<tr><td>Gender (%female)</td><td>0%</td><td>0%</td></tr>
<tr><td>No. drinks/week, mean (SD)</td><td>10.12 (7.88)</td><td>9.53 (7.83)</td></tr>
<tr><td>Binge drinking prevalence, n (%)</td><td>314 (85.6%)</td><td>312 (84.3%)</td></tr>
<tr><td>AUDIT score, mean (SD)</td><td>10.66 (4.30)</td><td>10.47 (4.00)</td></tr>
<tr><td>Number of alcohol consequences (0-12)*</td><td>2.82 (2.03)</td><td>2.84 (1.89)</td></tr>
</table>
*: The 12 assessed consequences were: was injured or injured someone else, had a hangover, missed a class or work, performed poorly at work, got into an argument or fight with friends, had unplanned sex, had unprotected sex, damaged property, had problems with the police, received medical treatment, observed negative impact on physical health, observed negative impact on mental health. Most frequently reported were: hangover (95%), observed a negative impact on physical health (29%), had unplanned sex (26%), damaged property (24%), missed a class or work (23%), and performed poorly at work (20%).
</td></tr>
<tr><td>Method of allocation</td><td>Randomization was at the individual level and was completely automated with no experimenter involvement. Randomization was embedded in the website code. Randomization took place immediately following completion of the baseline assessment and was unknown to the participants (i.e. by clicking a “next” button those in the intervention group were presented personalized feedback while controls
were thanked for participation).</td></tr>
</table>

Bibliographic reference/s	**Bertholet N; Cunningham J A; Faouzi M; Gaume J; Gmel G; Burnand B; Daeppen J B. Internet-based brief intervention for young men with unhealthy alcohol use: a randomized controlled trial in a general population sample. 2015 110(11):1735-1743.**	
Study name	Internet-based brief intervention for young men with unhealthy alcohol use: a randomized controlled trial in a general population sample	
Inclusion criteria	>14 drinks/week over the past 12 months OR at least one episode of binge drinking (6 or more drinks/occasion) per month over the past 12 months OR AUDIT scores >=8 (23, 24)	
Exclusion criteria	No exclusion criteria.	
Intervention	**TIDieR Checklist criteria**	**Details**
	Brief Name	-
	Rationale/theory/Goal	To test the efficacy of an internet-based brief intervention (IBI) in decreasing alcohol use among young Swiss men aged 21 year on average outside of a university setting. The goal was to reduce the mean number of alcoholic drinks consumed per week.
	Materials used	The study intervention was adapted from www.alcooquizz.ch. It consisted of 1) normative feedback, indicating the percentage of people of the same age drinking as much as the participant and less than the participant (for weekly drinking and binge drinking frequency), 2) feedback on four categories of consequences (“me, my body and my mind”; “me and the others”; “me and my professional activities”; and “me, violence and accidents”) with a gradation of impact for each category between low and high according to the number of reported consequences), 3) calorific value of reported consumption and equivalents depicted as hamburgers and chocolate bars, 4) computed blood alcohol concentration for reported maximum number of drinks per occasion, 5) indication of risk (according to the presence of weekly risky drinking, binge drinking and AUDIT score), 6) information on alcohol and health, and 7) recommendations indicating low-risk drinking limits (i.e., no more than 14 drinks per week and no more than 5 drinks per occasion). Participants received personalized feedback online immediately displayed on the screen upon completing their baseline assessment, along with an email thanking them for finishing the questionnaire and containing a copy of the feedback. Therefore, they could keep a copy of the feedback, but could not access the intervention website more than once. Participants in the control group completed the baseline assessment and then were shown a screen that thanked them for their participation. They also received an email thanking them for finishing the questionnaire, but did not get any feedback.

Bibliographic reference/s	**Bertholet N; Cunningham J A; Faouzi M; Gaume J; Gmel G; Burnand B; Daeppen J B. Internet-based brief intervention for young men with unhealthy alcohol use: a randomized controlled trial in a general population sample. 2015 110(11):1735-1743.**	
Study name	Internet-based brief intervention for young men with unhealthy alcohol use: a randomized controlled trial in a general population sample	
	Procedures used	Tailored feedback on drinking habits given by an automated website.
	Provider	-
	Digital platform	Website link sent via email after baseline assessment. Reminder emails were sent if not completed within 3 days.
	Location	Switzerland
	Duration	6 months
	Intensity	One assessment is completed with two follow-ups at 1 and 6 months.
	Tailoring/adaptation	Tailored. Feedback is given by the website which is dependent on the answers given by participants.
	Planned treatment fidelity	-
	Actual treatment fidelity	-
	Other details	-
Follow up	6- months follow up	
Data collection	Electronic assessments were at baseline (before randomization) and at 1 and 6 months. Participants received a personal email link for online access. Reminders were sent if assessments were not completed within 3 days. If still not completed after another 3 days, research assistants (blinded to group allocation) tried to contact participants by phone and/or short text messages and encouraged them to do the assessment, providing again links to assessment if requested. The baseline assessment was kept to a minimum to decrease the risk of assessment reactivity and to have a study website similar to what participants could find on the internet outside of a research setting. The assessment contained questions on the typical frequency of drinking and amount consumed per typical drinking day, as well as frequency of drinking episodes with six or more drinks. The quantity/frequency measures have been validated and been used in this population group in internet studies. The number of drinks per week was obtained by multiplying the number of drinking days per week by the number of standard drinks per drinking days. The time frame was adapted to avoid overlapping of follow-up measures with the baseline measures (i.e. by using the indications: “thinking of the past month/past 6 months or since the last time we asked you about your drinking”). The baseline assessment contained the AUDIT and a list of 12 possible alcohol-related consequences. Both instruments covered the past 12 months. The 6-month assessment also contained the AUDIT and the list of consequences, adapted to cover a 6 months period. The primary outcome was the number of drinks per week. It was evaluated at 1 and 6 months. Secondary outcomes were binge drinking prevalence, evaluated at 1 and 6 months, AUDIT score at 6 months and number of alcohol-related consequences at 6 months. Of note, binge drinking was recorded as a second primary outcome in the registered protocol.	

<table>
<tr><td>Bibliographic reference/s</td><td>Bertholet N; Cunningham J A; Faouzi M; Gaume J; Gmel G; Burnand B; Daeppen J B. Internet-based brief intervention for young men with unhealthy alcohol use: a randomized controlled trial in a general population sample. 2015 110(11):1735-1743.</td></tr>
<tr><td>Study name</td><td>Internet-based brief intervention for young men with unhealthy alcohol use: a randomized controlled trial in a general population sample</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td>Drinking outcomes at 6 months.
<table>
<tr><td></td><td>Intervention</td><td>Control</td><td></td></tr>
<tr><td>Primary outcome</td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">No. drinks per week, mean difference [95% CI]</td><td>Unadjusted:
-1.68 [-2.47; -0.89]</td><td>Unadjusted:
-0.39 [-1.27; 0.50]</td><td rowspan="2"></td></tr>
<tr><td>Adjusted:
-1.59 [-2.42; -0.76]</td><td>Adjusted:
-0.47 [-1.30; 0.35]</td></tr>
<tr><td rowspan="2">Binge drinking prevalence, mean difference [95% CI]</td><td>Unadjusted:
-15.6%[-21.5; -9.7]</td><td>Unadjusted:
-13.5%[-19.4; -7.5]</td><td rowspan="2"></td></tr>
<tr><td>Adjusted:
-15.5%[-21.4; -9.6]</td><td>Adjusted:
-13.4%[-19.4; -7.6]</td></tr>
<tr><td rowspan="2">AUDIT score, mean difference [95% CI]</td><td>Unadjusted:
-1.71[-2.1; -1.32]</td><td>Unadjusted:
-1.70 [-2.08; -1.32]</td><td rowspan="2"></td></tr>
<tr><td>Adjusted:
-0.93 [-1.29; -0.56]</td><td>Adjusted:
-0.94[-1.31; -0.56]</td></tr>
</table>
Mean difference is between self-reported baseline drinking and 6-month follow-up.</td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td>
<table>
<tr><td></td><td>Intervention
N
% quit (SE)</td><td>Control
N
% quit (SE)</td><td>Subgroup
Relative risk
(95% CI)</td></tr>
<tr><td>Secondary outcome</td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">Number of unintended consequences, mean difference [95% CI]</td><td>Unadjusted:
-0.71 [-0.91; -0.50]</td><td>Unadjusted:
-0.58 [-0.75; -0.41]</td><td rowspan="2"></td></tr>
<tr><td>Adjusted:
-0.69 [-0.88; -0.51]</td><td>Adjusted:
-0.59 [-0.77; -0.41]</td></tr>
</table></td></tr>
<tr><td>Statistical Analysis</td><td>Wilcoxon rank-sum tests and Pearson Chi-square tests were used to investigate the occurrence of potential selection and attrition biases. Intervention impacts were assessed with a random-effects negative binomial model for mean number of drinks/week, and with a random-effects logit model for binge drinking prevalence. AUDIT scores and number of alcohol-related consequences, measured only at baseline and 6 months, were tested using negative binomial regressions adjusted for the baseline measures. Negative binomial regression models were chosen for all count
outcomes because they best fitted the count distribution in the sample. All models</td></tr>
</table>

Bibliographic reference/s	**Bertholet N; Cunningham J A; Faouzi M; Gaume J; Gmel G; Burnand B; Daeppen J B. Internet-based brief intervention for young men with unhealthy alcohol use: a randomized controlled trial in a general population sample. 2015 110(11):1735-1743.**		
Study name	Internet-based brief intervention for young men with unhealthy alcohol use: a randomized controlled trial in a general population sample		
	were adjusted for baseline AUDIT score, age and linguistic region. All analyses were based on an intention-to-treat approach (i.e., individuals were analyzed according to their initial group allocation) Among participants lost to follow-up, missing data at 1 or 6 months were replaced with the last observation carried forward. All analyses were done with Stata (StataCorp. 2013. Stata Statistical Software: Release 13. College Station, TX: StataCorp LP).		
Risk of bias (ROB) **Overall ROB**	**Outcome name**		
	Outcome	**Judgement (Low / High / some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Low risk	Randomization took place immediately following completion of the baseline assessment and was unknown to the participants. No significant baseline imbalances
	Risk of bias due to deviations from intended interventions (assignment)	Low risk	Computer-delivered intervention and participants were not aware of the other arm.
	Risk of bias due to deviations from intended interventions (adherence)	Low risk	Computer-delivered intervention and participants were not aware of the other arm with no possibility of changing arms. Results were adjusted for baseline drinking habits.
	Missing outcome data	Low risk	70 participants were lost to follow-up at 6 months. No reasons identified that would relate attrition to health/drinking status.
	Risk of bias in measurement of the outcome	Low risk	Measured as in review protocol. Assessment tool same in both arms. Results were self-reported and participants were not aware it was a trial; results were inputted into a computer.
	Risk of bias in selection of the reported result	Some concerns	No trial protocol, only uploaded after trial completion.
	Other sources of bias		
	Overall Risk of Bias	Some concerns	
	Other outcome details		
Source of funding			
Comments			
Additional references			

Bibliographic reference/s	**Bertholet N; Cunningham J A; Faouzi M; Gaume J; Gmel G; Burnand B; Daeppen J B. Internet-based brief intervention for young men with unhealthy alcohol use: a randomized controlled trial in a general population sample. 2015 110(11):1735-1743.**	
Study name	Internet-based brief intervention for young men with unhealthy alcohol use: a randomized controlled trial in a general population sample	
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences	
	Reward and threat	
	Repetition and substitution	
	Antecedents	x
	Associations	
	Covert Learning	
	Natural Consequences	
	Feedback and monitoring	x
	Goals and planning	
	Social support	
	Self-belief	
	Comparison of outcomes	x
	Identity	
	Shaping knowledge	x
	Regulation	
	Comparison of behaviour	x

Boß 2018

Bibliographic reference/s	**Boß L; Lehr D; Schaub MP; Paz Castro R; Riper H; Berking M; Ebert D D; Efficacy of a web-based intervention with and without guidance for employees with risky drinking: results of a three-arm randomized controlled trial. 2018 Apr;113(4):635-646.**
Study name	Efficacy of a web-based intervention with and without guidance for employees with risky drinking: results of a three-arm randomized controlled trial
Registration	Controlled-Trials.com ISRCTN31070347; German clinical trials register (No. DRKS00006105)
Study type	RCT
Study dates	Recruitment from October 2014 to February 2016
Objective	To test the efficacy of a web-based alcohol intervention named 'GET.ON Clever weniger trinken' (CWT; be smart – drink less) in employees with a problematic drinking pattern. The trial tested 2 versions of the intervention: unguided/purely self-help and guided.
Country/ Setting	Germany
Number of participants / clusters	432 (n=146 for unguided intervention; n=142 guided intervention; n=144 waiting list control)
Attrition	1655 registered on the website, of which 817 did not complete the initial questionnaire. 838 were assessed for eligibility and 404 were excluded. A further 2 withdrew from the study after randomization but before intervention and asked for their data sets to be deleted. The final study sample was 432.

<table>
<tr><td>Bibliographic reference/s</td><td colspan="4">Boß L; Lehr D; Schaub MP; Paz Castro R; Riper H; Berking M; Ebert D D; Efficacy of a web-based intervention with and without guidance for employees with risky drinking: results of a three-arm randomized controlled trial. 2018 Apr;113(4):635-646.</td></tr>
<tr><td>Study name</td><td colspan="4">Efficacy of a web-based intervention with and without guidance for employees with risky drinking: results of a three-arm randomized controlled trial</td></tr>
<tr><td></td><td colspan="4">After 6 weeks, 110, 106 and 123 were available for follow-up, in the unguided intervention, guided intervention and control, respectively, and 84, 87 and 100 after 6 months, respectively.</td></tr>
<tr><td>Participant /community characteristics .</td><td colspan="4"><table>
<tr><td></td><td>Guided intervention</td><td>Unguided intervention</td><td>Control</td></tr>
<tr><td>Age (SD)</td><td>47.5 (9.8)</td><td>47.6 (9.3)</td><td>47.3 (10.3)</td></tr>
<tr><td>Gender (%female)</td><td>83 (58.5)</td><td>84 (57.5)</td><td>89 (61.8)</td></tr>
<tr><td>No. drinks/week, mean (SD)</td><td>10.12 (7.88)</td><td>9.53 (7.83)</td><td></td></tr>
<tr><td>Full-time employed, n (%)</td><td>102 (71.8)</td><td>97 (66.4)</td><td>102 (70.8)</td></tr>
<tr><td>Part-time employed, n (%)</td><td>33 (23.2)</td><td>33 (23.2)</td><td>34 (23.6)</td></tr>
<tr><td>On sick leave, n (%)</td><td>-</td><td>-</td><td>3 (2.1)</td></tr>
<tr><td>Seeking work, n (%)</td><td>5 (3.5)</td><td>10 (6.8)</td><td>4 (2.8)</td></tr>
<tr><td>Not gainfully employed, n (%)</td><td>2 (1.4)</td><td>1 (0.7)</td><td>1 (0.7)</td></tr>
<tr><td>Work experience in years, mean (SD)</td><td>23.2 (11.6)</td><td>23.0 (11.1)</td><td>23.5 (11.1)</td></tr>
<tr><td>Service sector worker, n (%)</td><td>36 (25.4)</td><td>34 (23.3)</td><td>33 (22.9)</td></tr>
<tr><td>Economy sector worker, n (%)</td><td>25 (17.4)</td><td>21 (14.4)</td><td>16 (11.3)</td></tr>
<tr><td>Health, n (%)</td><td>23 (16.2)</td><td>20 (13.7)</td><td>16 (11.1)</td></tr>
<tr><td>Social, n (%)</td><td>17 (12.0)</td><td>26 (17.8)</td><td>13 (9.0)</td></tr>
<tr><td>Information technologies, n (%)</td><td>9 (6.3)</td><td>7 (4.8)</td><td>9 (6.3)</td></tr>
<tr><td>Other sectors, n (%)</td><td>41 (28.9)</td><td>38 (26.0)</td><td>48 (33.3)</td></tr>
<tr><td>Income in Euros, per month
• <1000, n (%)
• 1000-2000, n (%)
• 2000-3000, n (%)
• 3000-4000, n (%)
• 4000-5000, n (%)
• >5000, n (%)
• Prefer not to say, n (%)
• No paid employment, n (%)</td><td>
• 4 (2.8)
• 31 (21.8)
• 30 (21.1)
• 22 (15.5)
• 14 (9.9)
• 22 (15.5)
• 7 (4.9)
• 12 (8.5)</td><td>
• 10 (6.8)
• 29 (19.9)
• 26 (17.8)
• 29 (19.9)
• 14 (9.6)
• 20 (13.7)
• 3 (2.1)
• 15 (10.3)</td><td>
• 13 (9.1)
• 29 (20.3)
• 25 (17.5)
• 19 (13.3)
• 16 (11.2)
• 23 (16.1)
• 6 (4.2)
• 13 (9.1)</td></tr>
</table></td></tr>
</table>

Bibliographic reference/s	**Boß L; Lehr D; Schaub MP; Paz Castro R; Riper H; Berking M; Ebert D D; Efficacy of a web-based intervention with and without guidance for employees with risky drinking: results of a three-arm randomized controlled trial. 2018 Apr;113(4):635-646.**	
Study name	Efficacy of a web-based intervention with and without guidance for employees with risky drinking: results of a three-arm randomized controlled trial	
Method of allocation	Randomization was performed by an independent researcher not otherwise involved in the study, using an automated, computer-based, random integer generator (randomisation.eu).	
Inclusion criteria	All the following must apply: >18 years old Employed or self-employed >14/21 (women/men) units/week AUDIT scores >=6/8 (women/men)	
Exclusion criteria	Past diagnosis of psychosis Past drug dependence (self-disclosed) Displayed a notable suicide risk, as assessed by question 9 of the Beck Depression score Received any other kind of treatment for alcohol-related problems or work-related stress prior to baseline assessment.	
Intervention	**TIDieR Checklist criteria**	**Details**
	Brief Name	Intervention is called 'GET.ON Clever weniger triken' (CWT; be smart – drink less)
	Rationale/theory/Goal	To test the efficacy of the web-based intervention in workers with a problematic drinking pattern. The trial had 3 arms: 1 control, 1 unguided using self-help with the intervention, and 1 using guided help from e-Coaches with the intervention. The study wanted to test the affect personal support has on web-based interventions.
	Materials used	The web-based intervention (CWT) consisted of five modules and participants were advised to complete one module per week. Each module contained general information, illustrative examples, interactive exercises, quizzes, audio and video files, and downloadable work sheets. Exercises in the intervention were adapted from evidence-based treatment elements for alcohol use disorders, such as motivational interviewing and tools to control drinking behaviours. All participants in either one of the two active intervention groups received the same web-based CWT. The unguided intervention group could contact the study team via email only if technical problems arose. Participants in the waiting list group were informed that monitoring and reflecting on their drinking behaviours, by completing the online assessments, could be their first step towards developing healthier drinking habits. They were informed that they would receive access to the unguided training program after their 6-month follow-up assessment.

Bibliographic reference/s	**Boß L; Lehr D; Schaub MP; Paz Castro R; Riper H; Berking M; Ebert D D; Efficacy of a web-based intervention with and without guidance for employees with risky drinking: results of a three-arm randomized controlled trial. 2018 Apr;113(4):635-646.**	
Study name	Efficacy of a web-based intervention with and without guidance for employees with risky drinking: results of a three-arm randomized controlled trial	
	Procedures used	The exercises included personalized normative feedback, pros and cons of drinking, goal setting, monitoring of drinking by an online-diary, action and coping planning to control drinking behaviour, and relapse prevention. In addition, the study integrated emotional regulation techniques. In the guided intervention group, each participant was assigned an eCoach, a trained psychologist who gave feedback following a semi-structured manual. In this study, guidance primarily aimed at encouraging participants to adhere to their training schedule (i.e., adherence-focused guidance). Coaching guidance had two elements: a) adherence monitoring and b) feedback on demand. If subjects did not complete a module within seven days, the eCoaches sent reminders written in an encouraging and motivational style. Feedback on demand referred to the opportunity to contact the eCoaches for any question via the internal messaging system provided in the training platform.
	Provider	
	Digital platform	After registration on an open-access website (www.geton-training.de), participants were emailed an online screening questionnaire to assess eligibility. The training modules were accessed online.
	Location	Germany
	Duration	5 weeks.
	Intensity	One assessment is completed per week for 5 weeks.
	Tailoring/adaptation	Tailored. Feedback is given by the website which is dependent on the answers given by participants.
	Planned treatment fidelity	-
	Actual treatment fidelity	-
	Other details	-
Follow up	6- months follow up	
Data collection	Baseline and 6-week values for standard units of alcohol a week was the primary outcome and were taken via Timeline Followback (TLFB). The 1 standard unit contained 10-12g of pure alcohol. Secondary outcomes included baseline to 6-month alcohol consumption, in units per week; The Depression Anxiety Stress Scale (DASS-21) at 6 weeks and 6 months; the Irritation Scale (IS); emotional irritation; Effort Reward Imbalance Questionnaire – Short Form (ERI-SF).	
Critical outcomes measures and	**Drinking outcomes at 6 months.**	

<table>
<tr><td>Bibliographic reference/s</td><td>Boß L; Lehr D; Schaub MP; Paz Castro R; Riper H; Berking M; Ebert D D; Efficacy of a web-based intervention with and without guidance for employees with risky drinking: results of a three-arm randomized controlled trial. 2018 Apr;113(4):635-646.</td></tr>
<tr><td>Study name</td><td>Efficacy of a web-based intervention with and without guidance for employees with risky drinking: results of a three-arm randomized controlled trial</td></tr>
<tr><td>effect size. (time points)</td><td>
<table>
<tr><td></td><td>Guided intervention</td><td>Unguided intervention</td><td>Control</td></tr>
<tr><td>Primary outcome</td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">No. units per week, mean, (SD)</td><td>Baseline:
29.44 (17.68)</td><td>Baseline:
30.26 (16.11)</td><td>Baseline:
28.99 (13.38)</td></tr>
<tr><td>6 months:
19.63 (11.70)</td><td>6 months:
17.89 (12.16)</td><td>6 months:
24.04 (13.18)</td></tr>
<tr><td rowspan="2">Binge drinking prevalence, mean difference [95% CI]</td><td>Unadjusted:
-5.6%[-21.5; -9.7]</td><td>Unadjusted:
-13.5%[-19.4; -7.5]</td><td>Unadjusted:
-0.93 [-1.29; -0.56]</td></tr>
<tr><td>Adjusted:
-15.5%[-21.4; -9.6]</td><td>Adjusted:
-13.4%[-19.4; -7.6]</td><td>Adjusted:
-0.94[-1.31; -0.56]</td></tr>
</table>
Mean difference is between self-reported baseline drinking and 6-month follow-up.
</td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td>
<table>
<tr><td></td><td>Guided Intervention</td><td>Unguided intervention</td><td>Control</td></tr>
<tr><td>Secondary outcome</td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">Depression Anxiety Stress Scale – Stress, mean (SD)</td><td>Baseline:
6.64 (4.80)</td><td>Baseline:
7.33 (4.67)</td><td>Baseline:
6.72 (4.81)</td></tr>
<tr><td>6 months:
4.39 (3.30)</td><td>6 months:
5.00 (4.00)</td><td>6 months:
6.10 (4.43)</td></tr>
<tr><td rowspan="2">Depression Anxiety Stress Scale - Depression</td><td>Baseline:
4.96 (4.73)</td><td>Baseline:
5.17 (4.71)</td><td>Baseline:
4.60 (4.50)</td></tr>
<tr><td>6 months:
3.43 (3.30)</td><td>6 months:
4.04 (3.76)</td><td>6 months:
4.60 (4.27)</td></tr>
<tr><td rowspan="2">Depression Anxiety Stress Scale – Anxiety</td><td>Baseline:
1.90 (2.42)</td><td>Baseline:
2.42 (2.97)</td><td>Baseline:
2.31 (7.22)</td></tr>
<tr><td>6 months:
1.51 (1.60)</td><td>6 months:
2.04 (2.53)</td><td>6 months:
2.51 (2.87)</td></tr>
</table>
</td></tr>
<tr><td>Statistical Analysis</td><td>All analyses done on IBM SPSS (SPSS Inc, Chicago, IL, USA).
Analyses were completed following intention to treat procedures.
Multiple imputation were used to account for missing data. A Markov Chain Monte Carlo multivariate imputation algorithm with 100 estimators per missing value was adopted to achieve this. Sensitivity analyses were completed using the baseline measurement carried forward.
Based on a power of 80%, n=528 was needed to detect an intervention effect of d = 0.30 relative to the control condition at 6 weeks. Considering the sample size of 434, the trial had 80% power to detect an intervention effect of d = 0.33.</td></tr>
</table>

Bibliographic reference/s	**Boß L; Lehr D; Schaub MP; Paz Castro R; Riper H; Berking M; Ebert D D; Efficacy of a web-based intervention with and without guidance for employees with risky drinking: results of a three-arm randomized controlled trial. 2018 Apr;113(4):635-646.**		
Study name	Efficacy of a web-based intervention with and without guidance for employees with risky drinking: results of a three-arm randomized controlled trial		
	For baseline to 6 week measurements, a hierarchical multiple regression analysis was conducted, which included the study condition and the baseline measurement of the outcome, with predictors: gender, age, education (high vs. low and mid-level), depression, irritation and effort and reward at work. Unguided and guided intervention were compared and if they did not significantly differ, would be lumped into 1 analysis vs the control. For all continuous analyses, Cohen's d was calculated based on imputed data by subtracting the average post-assessment score of one study group from the other and then dividing this value by the pooled standard deviations of the post scores. To analyse interventional effects at an individual level, Pearson chi-square was used to test for group differences in the number of responders and calculated the odds ratio (OR) with 95% confidence intervals (CI).		
Risk of bias (ROB) **Overall ROB**	**Outcome name**		
	Outcome	**Judgement (Low / High / some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Low risk	Central randomisation. Randomisation was done via computer and emails were sent to participants by a researcher not involved with data handling. No significant baseline imbalances
	Risk of bias due to deviations from intended interventions (assignment)	High risk	Blinding not possible and participants aware of the trial. No information about how to stop control group access to intervention before follow-up assessments taken. Deviations may have affected outcome.
	Risk of bias due to deviations from intended interventions (adherence)	Some concerns	Blinding not possible. No deviations mentioned but no information about how to stop control group access to intervention before follow-up assessments taken.
	Missing outcome data	Low risk	31% to 42% attrition rates across groups but analyses showed missingness was at random.
	Risk of bias in measurement of the outcome	Some concerns	Study participants were aware of their intervention status, which may have affected their judgement on how much alcohol they consumed.

Bibliographic reference/s	**Boß L; Lehr D; Schaub MP; Paz Castro R; Riper H; Berking M; Ebert D D; Efficacy of a web-based intervention with and without guidance for employees with risky drinking: results of a three-arm randomized controlled trial. 2018 Apr;113(4):635-646.**		
Study name	Efficacy of a web-based intervention with and without guidance for employees with risky drinking: results of a three-arm randomized controlled trial		
	Risk of bias in selection of the reported result	Some concerns	Multiple outcomes in protocol are not reported in trial.
	Other sources of bias		
	Overall Risk of Bias	High	
	Other outcome details		
Source of funding			
Comments			
Additional references			

Behaviour change techniques (16 theoretical clusters)		
	Scheduled consequences	
	Reward and threat	
	Repetition and substitution	
	Antecedents	x
	Associations	
	Covert Learning	
	Natural Consequences	
	Feedback and monitoring	x
	Goals and planning	x
	Social support	
	Self-belief	
	Comparison of outcomes	x
	Identity	
	Shaping knowledge	x
	Regulation	x
	Comparison of behaviour	x

Brendryen 2017

Bibliographic reference/s	**Brendryen H; Johansen A; Duckert F; Nesvag S; A Pilot Randomized Controlled Trial of an Internet-Based Alcohol Intervention in a Workplace Setting. 2017 Oct;24(5):768-777.**
Study name	A Pilot Randomized Controlled Trial of an Internet-Based Alcohol Intervention in a Workplace Setting
Registration	ClinicalTrials.gov Identifier: NCT01931618
Study type	RCT
Study dates	April 2011 to May 2012
Objective	To establish the efficacy of an internet-based alcohol intervention with or without self-help within a workplace setting.
Country/ Setting	Norway

<table>
<tr><td>Bibliographic reference/s</td><td colspan="3">Brendryen H; Johansen A; Duckert F; Nesvag S; A Pilot Randomized Controlled Trial of an Internet-Based Alcohol Intervention in a Workplace Setting. 2017 Oct;24(5):768-777.</td></tr>
<tr><td>Study name</td><td colspan="3">A Pilot Randomized Controlled Trial of an Internet-Based Alcohol Intervention in a Workplace Setting</td></tr>
<tr><td>Number of participants / clusters</td><td colspan="3">85 (n=43 for intensive self-help; n=42 online booklet)</td></tr>
<tr><td>Attrition</td><td colspan="3">In the intensive self-help group, 17 were lost at 2 months (39%) and 15 at 6 months (35%).
In the online booklet group, 12 were lost at 2 months (28%) and 7 at 6 months (17%).</td></tr>
<tr><td>Participant /community characteristics.</td><td colspan="3"><table><tr><td></td><td>Intensive self-help</td><td>Online booklet</td></tr><tr><td>Age, mean (SD)</td><td>43 (11)</td><td>43 (11)</td></tr><tr><td>Gender, n (%female)</td><td>19 (44)</td><td>25 (60)</td></tr><tr><td>No. drinks/week, mean (SD)</td><td>17.0 (6.4)</td><td>17.3 (8.7)</td></tr></table></td></tr>
<tr><td>Method of allocation</td><td colspan="3">Randomization was performed throughout the recruitment period and happened immediately after the participants supplied their contact information.</td></tr>
<tr><td>Inclusion criteria</td><td colspan="3">All the following must apply:
>18 years old
Employed
Completed the baseline assessment with no missing items
Provided a valid email address and Norwegian phone number</td></tr>
<tr><td>Exclusion criteria</td><td colspan="3">None reported.</td></tr>
<tr><td rowspan="4">Intervention</td><td>TIDieR Checklist criteria</td><td>Details</td></tr>
<tr><td>Brief Name</td><td>None.</td></tr>
<tr><td>Rationale/theory/Goal</td><td>An interactive self-help program was believed to reduce users' alcohol consumption through multiple interactive sessions, reminder emails and text messages. The central concept of the program is to support continued self-regulation throughout the behaviour change process.</td></tr>
<tr><td>Materials used</td><td>Web-based interactive sessions, emails and text messages.
The control group was given an e-booklet that covered general information about alcohol, its effect on the body, and potential risks and harms. The aim was to get users to reduce their alcohol consumption but did not provide advice on changing behaviour.</td></tr>
<tr><td>Procedures used</td><td>The intensive intervention has a focus on goal setting and tracking of alcohol consumption on a day-to-day basis; relapse prevention that included personalised content aimed at preventing a full-blown relapse; emotion regulation based on positive psychology and cognitive behavioural therapy; and alcohol education.
In the guided intervention group, the e-booklet covered general information about alcohol, its effect on the body, and potential risks and harms.</td></tr>
</table>

Bibliographic reference/s	**Brendryen H; Johansen A; Duckert F; Nesvag S; A Pilot Randomized Controlled Trial of an Internet-Based Alcohol Intervention in a Workplace Setting. 2017 Oct;24(5):768-777.**	
Study name	A Pilot Randomized Controlled Trial of an Internet-Based Alcohol Intervention in a Workplace Setting	
	Provider	-
	Digital platform	Internet. Both groups received material immediately after randomisation.
	Location	Norway
	Duration	23 weeks.
	Intensity	intensive self-help intervention includes 62 follow-up sessions (not counting the screening session), and uses tunnel information architecture, which means that the program withholds and gradually releases sessions in a predetermined sequence. That is, one session is released each day for 8 weeks (56 sessions), then 1 session per week for 3 weeks (3 sessions), and then once every fourth week for the remaining period (3 sessions).
	Tailoring/adaptation	Tailored. Personalised feedback is given to participants if they report relapsing.
	Planned treatment fidelity	-
	Actual treatment fidelity	-
	Other details	-
Follow up	6- months follow up In the intensive group, the first 2 months are the most intensive and includes most of the delivery of the intervention.	
Data collection	Baseline, 2-month and 6-month drinking habits were assessed by FAST (a brief version of the AUDIT tool). Alcohol consumption was reported as weekly alcohol consumption as a sum of the number of drinks from the previous 7 days. A standard alcohol unit is equivalent to 12 g of pure alcohol.	
Critical outcomes measures and effect size. (time points)	**Drinking outcomes at 6 months.**	

	Intensive self-help	Online booklet
Primary outcome		
No. units per week, mean, (SD)	ITT: 13.4 (7.5)	ITT: 14.9 (7.8)
	Per protocol: 11.4 (7.2)	Per protocol: 14.6 (7.4)

Important outcomes measures and effect size. (time points)	
Statistical Analysis	All the analyses were based on a 0.05 alpha level (two-tailed). An a priori power analysis, based on the requirement of having an 80% chance of detecting an effect equal to a Cohen's d of 0.35, showed that a sample size of 260 was necessary to reach statistical significance. Linear regression analyses were used to compare outcomes across conditions for each of the two follow-up points. The 6 month follow-up is

Bibliographic reference/s	**Brendryen H; Johansen A; Duckert F; Nesvag S; A Pilot Randomized Controlled Trial of an Internet-Based Alcohol Intervention in a Workplace Setting. 2017 Oct;24(5):768-777.**		
Study name	A Pilot Randomized Controlled Trial of an Internet-Based Alcohol Intervention in a Workplace Setting		
	considered the prime outcome timepoint. The primary comparisons applied the intent-to-treat principle, in which all missing values were substituted with baseline values. The complete case analyses were performed as secondary comparisons. Three linear regression models were performed. The first model included experimental condition as the only predictor, the second model included baseline weekly alcohol consumption as a covariate, and the third model included all the baseline variables taken (i.e., baseline alcohol consumption, FAST, age, and gender). The third model was included to account for possible imbalances between groups, which may have been created by chance during recruitment—small imbalances that are not statistically significant may still bias the outcome comparison. The second and third regression models, as well as the baseline observation carried forward approach, were not specified in the original protocol, but instead added during the review process of a companion trial published elsewhere. As ancillary analyses, the changes in weekly alcohol consumption from baseline to the two follow-ups were analyzed by using paired samples t tests. The change scores with standard deviations were calculated.		
Risk of bias (ROB) **Overall ROB**	**Outcome name**		
	Outcome	**Judgement (Low / High / some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Low risk	Randomisation done via computer.
	Risk of bias due to deviations from intended interventions (assignment)	Low risk	Participants were not aware of the intervention assignment. Intention-to-treat analyses used.
	Risk of bias due to deviations from intended interventions (adherence)	Low risk	Participants were not aware of the intervention assignment. Intention-to-treat analyses used. Delivery of intervention through website.
	Missing outcome data	Some concerns	High attrition rates and imputation for missing outcome data done via last measurement carried forward. Attrition more likely to depend on intervention, not drinking habits of groups. Drinking intensity is not different between groups.
	Risk of bias in measurement of the outcome	Low risk	Both groups measured their alcohol consumption with the same tool.
	Risk of bias in selection of the reported result	Some concerns	Secondary outcomes reported in registered trial protocol not reported in publication.
	Other sources of bias		
	Overall Risk of Bias	Some concerns	
	Other outcome details		

Bibliographic reference/s	**Brendryen H; Johansen A; Duckert F; Nesvag S; A Pilot Randomized Controlled Trial of an Internet-Based Alcohol Intervention in a Workplace Setting. 2017 Oct;24(5):768-777.**	
Study name	A Pilot Randomized Controlled Trial of an Internet-Based Alcohol Intervention in a Workplace Setting	
Source of funding		
Comments		
Additional references		
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences	
	Reward and threat	
	Repetition and substitution	
	Antecedents	
	Associations	
	Covert Learning	
	Natural Consequences	
	Feedback and monitoring	x
	Goals and planning	x
	Social support	x
	Self-belief	
	Comparison of outcomes	
	Identity	
	Shaping knowledge	x
	Regulation	x
	Comparison of behaviour	

Carey 2017

Bibliographic reference/s	**Carey BC; Balestrieri SG; Miller MB; Merrill JE; diBello AM; Benz MB. Efficacy of the College Drinkers Check-Up for Student Drinkers Living Off Campus. Journal of Studies on Alcohol and Drugs. 2017 Jul; 78(4):571-579.**
Study name	Efficacy of the College Drinkers Check-Up for Student Drinkers Living Off Campus
Registration	
Study type	RCT
Study dates	Autumn 2015
Objective	To evaluate the efficacy of the CDCU in reducing alcohol use and related consequences among at-risk college students who have moved to off-campus housing. In addition, sex and baseline drinking severity were examined as moderators of intervention effects.
Country/ Setting	USA
Number of participants / clusters	N=381 were randomised n=190 to intervention group n=191 to assessment only group
Attrition	In the intervention group, 160 (84%) completed the baseline assessment and intervention; 73 (38%) were lost at 6 months

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Carey BC; Balestrieri SG; Miller MB; Merrill JE; diBello AM; Benz MB. Efficacy of the College Drinkers Check-Up for Student Drinkers Living Off Campus. Journal of Studies on Alcohol and Drugs. 2017 Jul; 78(4):571-579.</td></tr>
<tr><td>Study name</td><td colspan="2">Efficacy of the College Drinkers Check-Up for Student Drinkers Living Off Campus</td></tr>
<tr><td></td><td colspan="2">In the assessment only group, 166 (87%) completed the baseline assessment; 57 (30%) were lost at 6 months</td></tr>
<tr><td>Participant /community characteristics.</td><td colspan="2"><table><tr><th></th><th>All participants (n=381)</th></tr><tr><td>Gender, %female</td><td>61.0</td></tr><tr><td>Age, mean (SD)</td><td>20.97 (0.85)</td></tr><tr><td>Fourth year students, %</td><td>83</td></tr></table></td></tr>
<tr><td>Method of allocation</td><td colspan="2">Eligible participants provided consent and were randomised via computer algorithm. Method of allocation not disclosed.</td></tr>
<tr><td>Inclusion criteria</td><td colspan="2">18-24 years of age
Registered as living off campus for the 2015-2016 academic year
At least one heavy drinking episode (4+/5+ for females/males in one occasion) in the past 30 days.</td></tr>
<tr><td>Exclusion criteria</td><td colspan="2">None reported</td></tr>
<tr><td>Intervention</td><td>TIDieR Checklist criteria</td><td>Details</td></tr>
<tr><td></td><td>Brief Name</td><td>College Drinker's Check-up (CDCU)</td></tr>
<tr><td></td><td>Rationale/theory/Goal</td><td>To reduce hazardous drinking in heavy drinking university students via personalised feedback.</td></tr>
<tr><td></td><td>Materials used</td><td>Computer-based intervention.</td></tr>
<tr><td></td><td>Procedures used</td><td>Participants in the intervention arm complete a screening on the CDCU that provides personalised feedback on their drinking habits. There are 3 modules to work through:
Look at Your Drinking, which includes a decisional balance exercise, a comprehensive assessment of drinking and drug use, alcohol-related problems, and risk factors for future alcohol-related problems.
Get Feedback uses gender- and university-specific norms. Students receive feedback on the quantity and frequency of their drinking compared to their same gender fellow students at their university, BAC feedback, and feedback on how their frequency of alcohol-related problems compares to other, same gender students at their school.
Consider Your Options, extends the initial decisional balance exercise, asking users to rate the level of importance of the "good things" and the "not so good things" about their drinking. It also asks them how ready they are to change their drinking and takes their readiness into account in helping them develop a plan of action to reduce their drinking and risk for alcohol-related problems.
Control participants only completed assessment module of the CDCU.</td></tr>
</table>

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Carey BC; Balestrieri SG; Miller MB; Merrill JE; diBello AM; Benz MB. Efficacy of the College Drinkers Check-Up for Student Drinkers Living Off Campus. Journal of Studies on Alcohol and Drugs. 2017 Jul; 78(4):571-579.</td></tr>
<tr><td>Study name</td><td colspan="2">Efficacy of the College Drinkers Check-Up for Student Drinkers Living Off Campus</td></tr>
<tr><td rowspan="8"></td><td>Provider</td><td>-</td></tr>
<tr><td>Digital platform</td><td>Computer program</td></tr>
<tr><td>Location</td><td>US</td></tr>
<tr><td>Duration</td><td>35 minutes.</td></tr>
<tr><td>Intensity</td><td>1 session.</td></tr>
<tr><td>Tailoring/adaptation</td><td>The resource gives feedback based on participants self-reported consumption levels.</td></tr>
<tr><td>Planned treatment fidelity</td><td>-</td></tr>
<tr><td>Actual treatment fidelity</td><td>-</td></tr>
<tr><td>Other details</td><td>-</td></tr>
<tr><td>Follow up</td><td colspan="2">6-month follow up</td></tr>
<tr><td>Data collection</td><td colspan="2">All alcohol measures included standard drink equivalents (12 oz. beer; 5 oz. 12% table wine; 12 oz. wine cooler; or 1.25 oz. 80-proof distilled spirits). Participants reported the maximum number of drinks consumed in a single day in the past 30 days (peak drinking quantity) and the number of times in the past month they consumed 4+/5+ drinks (for females/males) on one drinking occasion (heavy drinking frequency). Using a daily drinking grid that listed the days of one week, participants filled in the number of drinks that they typically consume and duration of drinking on each day of a typical week in the last month. Daily quantities were summed to calculate the number of drinks participants consume in a typical week (drinks per week).
The Brief Young Adult Alcohol Consequences Questionnaire (BYAACQ) is a 24-item checklist of problems related to drinking; responses are dichotomous (yes/no) and refer to the past 30 days.
Baseline drinking severity was measured with the AUDIT, on a scale from 0-40.</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td colspan="2">Drinking outcomes at 6 months.
<table>
<tr><td></td><td>Intervention (n=160)</td><td>Control (n=166)</td><td>P values</td></tr>
<tr><td rowspan="3">Alcohol-related consequences previous 30 days, mean (SD)</td><td>Baseline: 5.13 (3.56)</td><td>Baseline: 4.95 (3.56)</td><td rowspan="2"></td></tr>
<tr><td>6 months: 3.76 (3.20)</td><td>6 months: 3.96 (3.35)</td></tr>
<tr><td>Mean difference: -1.37 (3.39)</td><td>Mean difference: -0.99 (3.46)</td><td>0.49</td></tr>
<tr><td rowspan="3">Heavy drinking frequency previous 30 days, mean (SD)</td><td>Baseline: 4.03 (3.09)</td><td>Baseline: 4.00 (2.88)</td><td rowspan="2"></td></tr>
<tr><td>6 months: 3.27 (3.07)</td><td>6 months: 3.64 (3.12)</td></tr>
<tr><td>Mean difference: -0.76 (3.08)</td><td>Mean difference: -0.36 (3.01)</td><td>0.32</td></tr>
<tr><td rowspan="2">Peak drinking quantity previous</td><td>Baseline: 7.28 (3.37)</td><td>Baseline: 7.23 (3.69)</td><td rowspan="2"></td></tr>
<tr><td>6 months:</td><td>6 months:</td></tr>
</table></td></tr>
</table>

Bibliographic reference/s	**Carey BC; Balestrieri SG; Miller MB; Merrill JE; diBello AM; Benz MB. Efficacy of the College Drinkers Check-Up for Student Drinkers Living Off Campus. Journal of Studies on Alcohol and Drugs. 2017 Jul; 78(4):571-579.**
Study name	Efficacy of the College Drinkers Check-Up for Student Drinkers Living Off Campus
	30 days, mean (SD): 6.19 (3.48) / 6.50 (4.06); Mean difference: -1.09 (3.43) / Mean difference: -0.73 (3.89); 0.29 Alcoholic drinks per week, mean (SD): Baseline: 11.04 (6.65) / Baseline: 11.32 (7.90); 6 months: 8.94 (7.50) / 6 months: 9.53 (7.90); Mean difference: -2.1 (7.11) / Mean difference: -1.79 (7.90); 0.63 p values from results of hierarchical linear modelling.
Important outcomes measures and effect size. (time points)	
Statistical Analysis	Data were screened for missing values, outliers, and violations of the assumptions of hierarchical linear modelling (HLM) before analysis. Outliers were determined as any value 3 SD above or below the mean. Outliers (n = 4 for heavy drinking frequency; n = 1 for drinks per week) were reduced to the highest non-outlying value plus 1, resulting in outcome distributions in the normal range. Primary analyses were conducted using HLM 7.0 with full maximum likelihood estimation. Examination of both within-person (e.g., change in drinking from baseline to 1 month) and between-person (e.g., sex) effects on outcomes were conducted. In a subsequent set of exploratory models, sex and baseline AUDIT scores were then tested as moderators of treatment effects at each follow-up.
Risk of bias (ROB) **Overall ROB**	**Outcome name**

Outcome	Judgement (Low / High / some concerns)	Comments
Risk of bias arising from the randomisation process	Low risk	Computer-generated sequence and allocation likely concealed. No differences between baseline characteristics of groups.
Risk of bias due to deviations from intended interventions (assignment)	Low risk	Questionnaires and interventions completed by participants by computer and text. Intention to treat analyses conducted.
Risk of bias due to deviations from intended interventions (adherence)	Some concerns	Questionnaires and interventions completed by participants by computer. High attrition rate after assignment. Appropriate analysis conducted to address.
Missing outcome data	Low risk	High rate of attrition. Imputation done by multiple imputation (predictive mean matching).

Bibliographic reference/s	**Carey BC; Balestrieri SG; Miller MB; Merrill JE; diBello AM; Benz MB. Efficacy of the College Drinkers Check-Up for Student Drinkers Living Off Campus. Journal of Studies on Alcohol and Drugs. 2017 Jul; 78(4):571-579.**		
Study name	Efficacy of the College Drinkers Check-Up for Student Drinkers Living Off Campus		
	Risk of bias in measurement of the outcome	Low risk	Done via computer on same tool.
	Risk of bias in selection of the reported result	Some concerns	No registered protocol.
	Other sources of bias		
	Overall Risk of Bias	Some concerns	
	Other outcome details		
Source of funding	Brown University School of Public Health and National Institute on Alcohol Abuse and Alcoholism Grants R01-AA012518 (to Kate B. Carey), T32-AA007459 (to Peter Monti), and K01AA022938 (to Jennifer E. Merrill).		
Comments			
Additional references			

Behaviour change techniques (16 theoretical clusters)	
Scheduled consequences	
Reward and threat	
Repetition and substitution	
Antecedents	
Associations	
Covert Learning	
Natural Consequences	
Feedback and monitoring	x
Goals and planning	x
Social support	
Self-belief	
Comparison of outcomes	x
Identity	
Shaping knowledge	x
Regulation	
Comparison of behaviour	

Collins 2014

Bibliographic reference/s	**Collins S E; Kirouac M ; Lewis M A; Witkiewitz K ; Carey K B; Randomized controlled trial of web-based decisional balance feedback and personalized normative feedback for college drinkers. 2014 Nov;75(6):982-92.**
Study name	Randomized controlled trial of web-based decisional balance feedback and personalized normative feedback for college drinkers
Registration	-
Study type	RCT
Study dates	-

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Collins S E; Kirouac M ; Lewis M A; Witkiewitz K ; Carey K B; Randomized controlled trial of web-based decisional balance feedback and personalized normative feedback for college drinkers. 2014 Nov;75(6):982-92.</td></tr>
<tr><td>Study name</td><td colspan="2">Randomized controlled trial of web-based decisional balance feedback and personalized normative feedback for college drinkers</td></tr>
<tr><td>Objective</td><td colspan="2">To test the efficacy of a novel personalised feedback intervention (DBF), relative to an assessment-only control condition and a personalised feedback intervention (PNF) of known efficacy at reducing alcohol consumption and alcohol-related problems.</td></tr>
<tr><td>Country/ Setting</td><td colspan="2">US</td></tr>
<tr><td>Number of participants / clusters</td><td colspan="2">724
Decisional balance (DBF), n=251 (n=224 exposed to intervention)
PNF, n=242 (n=211 exposed to intervention)
Control, n=231</td></tr>
<tr><td>Attrition</td><td colspan="2">DBF: 40 (16%) lost at 6 months; 70 (28%) lost at 12 months.
PNF: 37 (15%) lost at 6 months; 37 (24%) lost at 12 months.
Control: 41 (18%) lost at 6 months; 58 (25%) lost at 12 months.</td></tr>
<tr><td>Participant /community characteristics.</td><td colspan="2"><table><tr><th></th><th>Participant characteristics</th></tr><tr><td>Age, mean (SD)</td><td>20.78 (1.42)</td></tr><tr><td>Sex, %female</td><td>56</td></tr><tr><td>University year, %first</td><td>7.2</td></tr><tr><td>University year, %second</td><td>14.2</td></tr><tr><td>University year, %third</td><td>23.7</td></tr><tr><td>University year, %fourth</td><td>51.7</td></tr><tr><td>University year, %other</td><td>3.2</td></tr><tr><td>Ethnicity, %white</td><td>67.1</td></tr><tr><td>Ethnicity, %asian</td><td>17.8</td></tr><tr><td>Ethnicity, %multiracial</td><td>9.6</td></tr><tr><td>Ethnicity, %black</td><td>1</td></tr><tr><td>Ethnicity, %hawaiian/pacific islander</td><td>0.7</td></tr><tr><td>Ethnicity, %native american</td><td>0.6</td></tr><tr><td>Ethnicity, %hispanic/latino</td><td>6.5</td></tr><tr><td>Ethnicity, %other</td><td>3.3</td></tr></table>Baseline characteristics reported for all participants, not per arm.</td></tr>
<tr><td>Method of allocation</td><td colspan="2">Randomization was performed throughout the recruitment period and happened immediately after the participants supplied their contact information.</td></tr>
<tr><td>Inclusion criteria</td><td colspan="2">All the following must apply:
>18 years old
At least one heavy drinking episode (≥4/5 [women/men] drinks in one session within the last 30 days)</td></tr>
<tr><td>Exclusion criteria</td><td colspan="2">None reported.</td></tr>
<tr><td>Intervention</td><td>TIDieR Checklist criteria</td><td>Details</td></tr>
<tr><td></td><td>Brief Name</td><td>None.</td></tr>
</table>

Bibliographic reference/s	**Collins S E; Kirouac M ; Lewis M A; Witkiewitz K ; Carey K B; Randomized controlled trial of web-based decisional balance feedback and personalized normative feedback for college drinkers. 2014 Nov;75(6):982-92.**	
Study name	Randomized controlled trial of web-based decisional balance feedback and personalized normative feedback for college drinkers	
	Rationale/theory/Goal	A novel personalised feedback intervention (DBF), and a personalised feedback intervention (PNF) aimed at reducing alcohol consumption.
	Materials used	Web-based intervention.
	Procedures used	*Decisional balance feedback*. Participants received personalized feedback on their perceived advantages and disadvantages of their current drinking based on their self-report responses to the baseline decisional balance worksheet. This feedback included (a) a graphic representation of the decisional balance proportion, (b) graphic and textual representations of the quantitative total, (c) qualitative content of advantages and disadvantages of current drinking and reducing drinking, and (d) likelihood and importance of each advantage and disadvantage. For more information about the DBF intervention used in this study, please contact the corresponding author. *Personalized normative feedback*. The PNF was based on the normative feedback component of the BASICS intervention and was adapted from for online use. The PNF presented participants with personalized information designed to reduce overestimated normative perceptions about drinking in one's peer group. The PNF consisted of four main feedback elements: (a) typical weekly quantity compared with perceived and actual same-gender peer norms, (b) typical and peak estimated BAL compared with same-gender peer norms, (c) calories consumed from alcohol in a typical week compared with same-gender peer norms, and (d) money spent on alcohol during a typical week compared with same-gender peer norms.
	Provider	-
	Digital platform	Internet. Both groups received material immediately after randomisation.
	Location	US
	Duration	.
	Intensity	1 session
	Tailoring/adaptation	Tailored. Personalised feedback is given based on participants' individual alcohol consumption.
	Planned treatment fidelity	-
	Actual treatment fidelity	-
	Other details	-
Follow up	12- month follow up	
Data collection	Measures used to generate drinking outcome variables. The Frequency–Quantity (F-Q) questionnaire comprises single items assessing drinking consumption patterns (e.g.,	

<table>
<tr><td>Bibliographic reference/s</td><td>Collins S E; Kirouac M ; Lewis M A; Witkiewitz K ; Carey K B; Randomized controlled trial of web-based decisional balance feedback and personalized normative feedback for college drinkers. 2014 Nov;75(6):982-92.</td></tr>
<tr><td>Study name</td><td>Randomized controlled trial of web-based decisional balance feedback and personalized normative feedback for college drinkers</td></tr>
<tr><td></td><td>“Think of the occasion you drank the most in the last month. How much alcohol did you drink?” “How many days in the last month did you consume alcohol?”). This measure was used to assess whether participants experienced at least one heavy drinking episode in the past 30 days, which served as the primary inclusion criterion, as well as drinking frequency, which served as an outcome variable.
The Timeline Followback (TLFB) consists of monthly calendars that allow for retrospective evaluation of drinking behaviour for each day of the previous month(s).
The Rutgers Alcohol Problem Index consists of 23 items assessing alcohol-related consequences. Sample items include, “Not able to do your homework or study for a test” and “Wanted to stop drinking but couldn’t.” Respondents indicate on a Likert-type scale how many times in the past 30 days they experienced each problem listed (i.e., 0 = 0 times, 1 = 1–2 times, 2 = 3–5 times, 3 = 6–10 times, 4 = more than 10 times).
Measures used to generate personalized feedback intervention content. The Modified Daily Drinking Questionnaire (modified for this study from BASICS) includes a grid assessing alcohol consumption on each day of a typical drinking week during the past 30 days. Weekly drinking quantity scores were created by summing the number of standard drinks (one standard drink is equal to 12 oz. beer, 5 oz. wine, or 1.5 oz. distilled spirits) reported over a typical week. These scores were used in the PNF intervention as a comparison with perceived and actual norms. The Drinking Norms Rating Form asks participants to report perceived daily alcohol use of average U.S. and local college students of like gender over the course of a typical week. The perceived norm for weekly drinking quantity was the sum of the number of standard drinks participants believed same-gender students at their university had consumed. This measure was used in the construction of the PNF to highlight discrepancies between participants’ perceptions of drinking norms and actual drinking norms.
Using an open-ended decisional balance worksheet, participants were asked to think about their current pattern of drinking and record the advantages and disadvantages of “continuing to drink as you are now” and “reducing your drinking in some way you feel comfortable with.” Responses were capped at 16 for each of the four categories. No participants approached 16 responses, which allays concerns about potential data truncation. Next, participants were asked to report on the likelihood and importance of each of the named advantages and disadvantages on a 7-point, Likert-type scale.</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td>Drinking outcomes at 6 months.
<table>
<tr><td></td><td>Control*</td><td>DBF*†</td><td>PNF†</td></tr>
<tr><td>Primary outcome</td><td></td><td></td><td></td></tr>
<tr><td rowspan="3">No. days drinking past 30 days, mean (SD)</td><td>Baseline:
9.23 (5.81)</td><td>Baseline:
9.20 (5.90)</td><td>Baseline:
9.59 (5.80)</td></tr>
<tr><td>6 months:
8.77 (6.23)</td><td>6 months:
8.36 (5.98)</td><td>6 months:
8.44 (6.12)</td></tr>
<tr><td>12 months:
8.61 (5.87)</td><td>12 months:
8.15 (5.69)</td><td>12 months:
8.67 (6.08)</td></tr>
<tr><td rowspan="2">No. days drinking past 30 days, median</td><td>Baseline:
8</td><td>Baseline:
8</td><td>Baseline:
9</td></tr>
<tr><td>6 months:
8</td><td>6 months:
7</td><td>6 months:
7</td></tr>
</table></td></tr>
</table>

Bibliographic reference/s	**Collins S E; Kirouac M ; Lewis M A; Witkiewitz K ; Carey K B; Randomized controlled trial of web-based decisional balance feedback and personalized normative feedback for college drinkers. 2014 Nov;75(6):982-92.**
Study name	Randomized controlled trial of web-based decisional balance feedback and personalized normative feedback for college drinkers

	12 months: 8	12 months: 8	12 months: 8
No units past 30 days, mean (SD)	Baseline: 39.24 (35.09)	Baseline: 41.22 (37.04)	Baseline: 40.53 (34.10)
	6 months: 32.56 (34.87)	6 months: 31.08 (31.22)	6 months: 33.18 (34.11)
	12 months: 28.43 (24.85)	12 months: 30.10 (29.95)	12 months: 33.26 (32.05)
No units past 30 days, median	Baseline: 29	Baseline: 30	Baseline: 29
	6 months: 23.5	6 months: 21	6 months: 21
	12 months: 22	12 months: 21	12 months: 23
No alcohol-related problems past 30 days, mean (SD)	Baseline: 5.00 (5.27)	Baseline: 5.82 (7.51)	Baseline: 5.60 (7.03)
	6 months: 8.77 (6.23)	6 months: 4.01 (6.13)	6 months: 5.44 (8.18)
	12 months: 8.61 (5.87)	12 months: 3.75 (4.82)	12 months: 4.91 (6.69)
No alcohol-related problems past 30 days, median	Baseline: 4	Baseline: 3.5	Baseline: 3
	6 months: 3	6 months: 2	6 months: 3
	12 months: 2	12 months: 2	12 months: 3

*: compared in control vs no intervention control analyses
†: compared in intervention vs other intervention analyses

Important outcomes measures and effect size. (time points)	
Statistical Analysis	Descriptive analyses were conducted using SPSS Version 19 (IBM Corp., Armonk, NY) to describe the sample as well as to determine the distribution shapes of the outcome variables and the presence of outliers. Because primary alcohol outcomes were determined to be positively skewed, overdispersed counts, nonparametric tests and negative binomial or zero-inflated negative binomial (ZINB) regressions were used for preliminary and primary analyses involving alcohol outcomes. Specifically, nonparametric tests (i.e., Kruskal–Wallis) and Pearson chi-square tests were used to examine baseline ineligible/included and intervention group differences as well as associations between data "missingness" and predictors of the primary models (i.e.,

Bibliographic reference/s	**Collins S E; Kirouac M ; Lewis M A; Witkiewitz K ; Carey K B; Randomized controlled trial of web-based decisional balance feedback and personalized normative feedback for college drinkers. 2014 Nov;75(6):982-92.**		
Study name	Randomized controlled trial of web-based decisional balance feedback and personalized normative feedback for college drinkers		
	tests of the intervention on drinking variables). In primary analyses, negative binomial or ZINB models were used to test the effects of the interventions on drinking outcomes.		
Risk of bias (ROB) **Overall ROB**	**Outcome name**		
	Outcome	**Judgement (Low / High / some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Low risk	No description of how sequence was generated. Computer assigns allocation. No differences in baseline characteristics suggesting no problems.
	Risk of bias due to deviations from intended interventions (assignment)	Low risk	Participants were not aware of the intervention assignment but in a university setting, participants may have spoken about their intervention to others in different groups. No deviations possible. Intention-to-treat analyses used.
	Risk of bias due to deviations from intended interventions (adherence)	Low risk	Participants were blinded but in a university setting, participants may have spoken about their intervention to others in different groups. Important co-intervention balanced across groups.
	Missing outcome data	Low risk	High attrition rates. Missingness on the drinking outcome variables was not associated with group or baseline drinking outcomes (ps > .09) and occurred at random.
	Risk of bias in measurement of the outcome	Low risk	Participants were blinded but may have deduced they were in different intervention groups through talking to other participants on campus. Assessment of outcome not influenced by knowledge of intervention received.
	Risk of bias in selection of the reported result	Some concerns	No registered protocol.
	Other sources of bias		
	Overall Risk of Bias	Some concerns	
	Other outcome details		
Source of funding			
Comments			
Additional references			

Bibliographic reference/s	**Collins S E; Kirouac M ; Lewis M A; Witkiewitz K ; Carey K B; Randomized controlled trial of web-based decisional balance feedback and personalized normative feedback for college drinkers. 2014 Nov;75(6):982-92.**
Study name	Randomized controlled trial of web-based decisional balance feedback and personalized normative feedback for college drinkers
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences: Reward and threat: Repetition and substitution: Antecedents: Associations: Covert Learning: Natural Consequences: Feedback and monitoring: x Goals and planning: Social support: Self-belief: Comparison of outcomes: x Identity: Shaping knowledge: x Regulation: Comparison of behaviour: x

Cunningham 2009

Bibliographic reference/s	**Cunningham JA; Wild TC; Cordingley J; van Mierlo T; Humphreys K; A randomized controlled trial of an internet-based intervention for alcohol abusers. 2009 Dec; 104(12): 2023–2032.**
Study name	A randomized controlled trial of an internet-based intervention for alcohol abusers
Registration	ClinicalTrials.gov registration #NCT00367575
Study type	RCT
Study dates	
Objective	To evaluate the check Your Drinking screener (CYD) in non-treatment-seeking problem drinkers from the general population in a naturalistic setting.
Country/ Setting	UK
Number of participants / clusters	185 (n=92 for intervention; n=93 for active control)
Attrition	Intervention = 7 (8%) lost at 3 months; 7 (8%) lost at 6 months (35 did not access website; 3 withdrew). Control = 3 (3%) lost at 3 months; 8 (9%) lost at 6 months.
Participant /community characteristics.	

	Intervention	**Control**
Age, mean (SD)	39.5 (13.5)	40.8 (13.4)
Gender, %female	42.4	51.6

Bibliographic reference/s	**Cunningham JA; Wild TC; Cordingley J; van Mierlo T; Humphreys K; A randomized controlled trial of an internet-based intervention for alcohol abusers. 2009 Dec; 104(12): 2023–2032.**	
Study name	A randomized controlled trial of an internet-based intervention for alcohol abusers	
	Some post-secondary education, %	78.3 / 77.4
	Full/part-time employed, %	62.6 / 62.4
	Family income, % • <£30,000 • $30,000-$49,000 • $50,000-$79,000 • $80,000 or more • Don't know/refused	 • 6.5 • 16.3 • 18.5 • 48.9 • 9.8	 • 14.0 • 12.8 • 21.5 • 48.4 • 3.2
Method of allocation	Randomization was conducted using a random numbers list (odd numbers for condition one and even numbers for condition two) with no stratification.	
Inclusion criteria	All the following must apply: >4 AUDIT-C scale. Home access to the internet. Participant consent. Filled in baseline questionnaire.	
Exclusion criteria	None reported.	
Intervention	**TIDieR Checklist criteria**	**Details**
	Brief Name	Check Your Drinking
	Rationale/theory/Goal	Website-based tool that compares drinkers' habits to those of peers. It was predicted that problem drinkers who were provided access to the CYD would display improved drinking outcomes compared to those in a no-intervention control group at 3- and 6-month follow-ups. Further, based on earlier work with the CYD intervention, it was predicted that drinking reductions would be observed among problem drinkers, but not with low-risk drinking recipients.
	Materials used	Website URL and access password was sent via post to participants in the intervention arm. If respondents had not accessed the website within 3 months a reminder letter was sent. Control group participants were sent a list of informational components that could be included in a computerized summary for drinkers, as respondents were informed that the purpose of the study was to help 'revise and evaluate self-help materials'
	Procedures used	The materials employed for the CYD have been modelled after the Drinker's Check-up and the Fostering Self-Change intervention. After completing a brief online assessment, participants receive a 'Personalized Drinking Profile'. The core elements of the CYD are: (i) normative feedback pie charts that compare the participant's drinking to others of the

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Cunningham JA; Wild TC; Cordingley J; van Mierlo T; Humphreys K; A randomized controlled trial of an internet-based intervention for alcohol abusers. 2009 Dec; 104(12): 2023–2032.</td></tr>
<tr><td>Study name</td><td colspan="2">A randomized controlled trial of an internet-based intervention for alcohol abusers</td></tr>
<tr><td></td><td></td><td>same age, sex and country of origin (for Canada, the United States and the United Kingdom; more country data to be added; and (ii) a summary of the participant’s severity of alcohol problems.
For the control group, the listed components were the same as those included in the CYD intervention (e.g. a chart that compares the user’s drinking to other Canadians of the same age and sex).</td></tr>
<tr><td></td><td>Provider</td><td>-</td></tr>
<tr><td></td><td>Digital platform</td><td>Internet.</td></tr>
<tr><td></td><td>Location</td><td>UK</td></tr>
<tr><td></td><td>Duration</td><td>10 minutes.</td></tr>
<tr><td></td><td>Intensity</td><td>One session.</td></tr>
<tr><td></td><td>Tailoring/adaptation</td><td>The intervention is tailored according the amount the participant drinks. The control components remain the same but would not be actively tailored as the intervention.</td></tr>
<tr><td></td><td>Planned treatment fidelity</td><td>-</td></tr>
<tr><td></td><td>Actual treatment fidelity</td><td>-</td></tr>
<tr><td></td><td>Other details</td><td>-</td></tr>
<tr><td>Follow up</td><td colspan="2">12-month follow up</td></tr>
<tr><td>Data collection</td><td colspan="2">Demographic characteristics including age, sex, marital status, education, gross family income and employment status were collected on the initial random digit dialling
telephone survey (this survey also contained the three AUDIT-C items to identify risky drinkers). All other items were collected on the paper survey mailed out with the consent form. These items included the AUDIT. Respondents’ drinking was also assessed using the period-specific normal week approach. This method asks respondents for their alcohol consumption during a typical week (i.e. usual number of drinks on each day of a typical week).</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td colspan="2">Drinking outcomes at 6 months.
<table>
<tr><td></td><td>Intervention (n=92)</td><td>Control (n=93)</td></tr>
<tr><td>Primary outcome</td><td></td><td></td></tr>
<tr><td rowspan="2">Typical weekly drinking, mean drinks/week (SD)</td><td>Baseline:
13.9 (10.9)</td><td>Baseline:
11.9 (10.1)</td></tr>
<tr><td>6 months:
11.1 (8.9)</td><td>6 months:
11.5 (10.3)</td></tr>
<tr><td rowspan="2">AUDIT-C score, mean (SD)</td><td>Baseline:
7.0 (2.1)</td><td>Baseline:
6.4 (2.1)</td></tr>
<tr><td>6 months:
6.2 (2.2)</td><td>6 months:
6.3 (2.3)</td></tr>
</table></td></tr>
<tr><td>Important outcomes measures and</td><td colspan="2">None reported.</td></tr>
</table>

Bibliographic reference/s	**Cunningham JA; Wild TC; Cordingley J; van Mierlo T; Humphreys K; A randomized controlled trial of an internet-based intervention for alcohol abusers. 2009 Dec; 104(12): 2023–2032.**		
Study name	A randomized controlled trial of an internet-based intervention for alcohol abusers		
effect size. (time points)			
Statistical Analysis	Distribution analysis was conducted before analysis of outcomes at baseline, 3 months and 6 months. Intention to treat analysis was carried out. Missing data was handled by baseline observation carried forward. Sensitivity analyses showed there was no significant effect of missing data on outcomes (intention to treat vs per protocol). Drinking variables were trimmed beyond 3 standard deviations with the next highest value, to get data that is more normally distributed. Composite outcome measures were made from number drinks in a typical week and the AUDIT-C. Analyses were conducted using 2 x 2 x 3 repeated-measures analyses of variance (ANOVAs). The within-subjects variable was time of follow-up (baseline, 3-month and 6-month follow-up). Intervention condition (received internet address or control group) and baseline problem drinking status (problem drinkers: score on the full AUDIT of 11 or more versus low-risk drinkers: AUDIT score of 4–10) were the between-subjects variables. A score of >11 was the cut-off for problem drinking. Analyses were also carried out to adjust for sex because differential criteria were not used for males and females. These are not presented because there was no significant effect (p>0.05). A conservative intention to treat analysis was conducted to include participants who did not access the CYD intervention. A total sample size of 170 respondents after attrition was estimated to have a power of 80% to test the hypothesis at the P < 0.05 level of significance. Because of initial problems in recruiting participants, the threshold for recruitment was lowered to AUDIT>4. However, sufficient numbers were recruited and separate analyses were also conducted for the lower and higher risk groups.		
Risk of bias (ROB) **Overall ROB**	**Outcome name**		
	Outcome	**Judgement (Low / High / some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Low risk	Randomisation done via computer.
	Risk of bias due to deviations from intended interventions (assignment)	Low risk	Participants were not aware of the intervention assignment. Participants sent in self-reported questionnaires. Intention-to-treat analyses were carried out.
	Risk of bias due to deviations from intended interventions (adherence)	Low risk	Participants were not aware of the intervention assignment. Participants sent in self-reported questionnaires. Intention-to-treat analyses were carried out. Intervention implemented successfully for most participants. No possibility of groups crossing over.

Bibliographic reference/s	**Cunningham JA; Wild TC; Cordingley J; van Mierlo T; Humphreys K; A randomized controlled trial of an internet-based intervention for alcohol abusers. 2009 Dec; 104(12): 2023–2032.**		
Study name	A randomized controlled trial of an internet-based intervention for alcohol abusers		
	Missing outcome data	Low risk	Attrition in returning follow-up questionnaires below 10%.
	Risk of bias in measurement of the outcome	Low risk	Same questionnaire sent to all participants. Participants unlikely to know which arm they were assigned.
	Risk of bias in selection of the reported result	Some concerns	Trial registered prospectively but four outcomes in protocol not reported.
	Other sources of bias		
	Overall Risk of Bias	Some concerns.	
	Other outcome details		
Source of funding			
Comments			
Additional references			

Behaviour change techniques (16 theoretical clusters)	Scheduled consequences	
	Reward and threat	
	Repetition and substitution	
	Antecedents	
	Associations	
	Covert Learning	
	Natural Consequences	x
	Feedback and monitoring	x
	Goals and planning	
	Social support	
	Self-belief	
	Comparison of outcomes	x
	Identity	
	Shaping knowledge	x
	Regulation	
	Comparison of behaviour	x

Doumas 2011

Bibliographic reference/s	**Doumas DM; Workman C; Smith D; Navarro A; Reducing high-risk drinking in mandated college students: Evaluation of two personalized normative feedback interventions. 2011 Jun;40(4):376-85.**
Study name	Reducing high-risk drinking in mandated college students: Evaluation of two personalized normative feedback interventions
Registration	
Study type	RCT
Study dates	Autumn 2007 – Autumn 2008

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Doumas DM; Workman C; Smith D; Navarro A; Reducing high-risk drinking in mandated college students: Evaluation of two personalized normative feedback interventions. 2011 Jun;40(4):376-85.</td></tr>
<tr><td>Study name</td><td colspan="2">Reducing high-risk drinking in mandated college students: Evaluation of two personalized normative feedback interventions</td></tr>
<tr><td>Objective</td><td colspan="2">The aim of the study was to assess if self-guided or counsellor-guided delivery of e-CHUG would be more successful in college students with an alcohol violation.</td></tr>
<tr><td>Country/ Setting</td><td colspan="2">US</td></tr>
<tr><td>Number of participants / clusters</td><td colspan="2">135 (n=81 for self-guided web-based personalised normative feedback (SWF); n=54 for counsellor-guided web-based personalised normative feedback)</td></tr>
<tr><td>Attrition</td><td colspan="2">SWF = 34 (42%) lost at 6 months.
CWF = 36 (67%) lost at 6 months.</td></tr>
<tr><td>Participant /community characteristics.</td><td colspan="2"><table><tr><th></th><th>Intervention</th></tr><tr><td>Age, mean (SD)</td><td>19.1 (1.01)</td></tr><tr><td>Gender, %female</td><td>30</td></tr><tr><td>Caucasian, %</td><td>84</td></tr><tr><td>African American, %</td><td>4</td></tr><tr><td>Hispanic, %</td><td>3</td></tr><tr><td>Asian American</td><td>3</td></tr><tr><td>Native American</td><td>1.5</td></tr><tr><td>Other ethnicity</td><td>4.5</td></tr><tr><td>Freshmen, %</td><td>59.4</td></tr><tr><td>Sophomores, %</td><td>29.3</td></tr><tr><td>Juniors, %</td><td>10.5</td></tr><tr><td>Seniors, %</td><td>0.8</td></tr></table>Baseline characteristics given as both arms grouped.</td></tr>
<tr><td>Method of allocation</td><td colspan="2">Randomization was conducted using a computer-generated random numbers table. Unclear how allocation was delivered or when allocation was done, before or after randomisation.</td></tr>
<tr><td>Inclusion criteria</td><td colspan="2">All the following must apply:
Students that violated the University alcohol policy</td></tr>
<tr><td>Exclusion criteria</td><td colspan="2">None reported.</td></tr>
<tr><td>Intervention</td><td>TIDieR Checklist criteria</td><td>Details</td></tr>
<tr><td></td><td>Brief Name</td><td>e-CHUG</td></tr>
<tr><td></td><td>Rationale/theory/Goal</td><td>e-CHUG is designed to reduce high-risk drinking by providing personalized feedback and normative data regarding drinking and the risks associated with drinking. The aim of the study was to assess if self-guided (SWF) or counsellor-guided (CWF) delivery of e-CHUG would be more successful in college students with an alcohol violation.</td></tr>
<tr><td></td><td>Materials used</td><td>Participants attended an appointment which briefed them on the study, where they filled out a baseline</td></tr>
</table>

Bibliographic reference/s	**Doumas DM; Workman C; Smith D; Navarro A; Reducing high-risk drinking in mandated college students: Evaluation of two personalized normative feedback interventions. 2011 Jun;40(4):376-85.**	
Study name	Reducing high-risk drinking in mandated college students: Evaluation of two personalized normative feedback interventions	
		questionnaire, and were assigned a personal code to identify responses. e-CHUG is accessed via a website. Students complete an online assessment of basic demographic information e.g. sex, age, weight, living situation, class standing and on drinking consumption. Participants in the CWF group completed the same web-based program (e-CHUG) as those in the SWF group. In addition, participants in the CWF group reviewed their feedback in a motivational interview (MI) with one of four advanced master's in counselling graduate students trained in motivational interviewing techniques. The counsellors were supervised by a licensed clinical psychologist and were provided a research manual that included guidelines for semi-structure motivational interview.
	Procedures used	Immediately following the assessment, individualized graphed feedback is provided in the following domains Summary of quantity and frequency of drinking including graphical feedback such as the number of cheeseburgers that are equivalent to alcohol calories consumed, graphical comparison of one's own drinking to U.S. adult and college drinking norms, estimated risk-status for negative consequences associated with drinking and risk-status for problematic drinking based on the participant's Alcohol Use Disorder Identification Test (AUDIT) score, genetic risk, tolerance, approximate financial cost of drinking in the past year, normative feedback comparing one's perception of peer drinking to actual university drinking normative data, and referral information for local agencies. Students in the SWF condition were monitored to ensure they reviewed the feedback. Participants in the CWF group reviewed their feedback immediately after completing e-CHUG. Feedback was based on motivational interviewing techniques including empathy, developing a discrepancy, avoiding argumentation, rolling with resistance and supporting self-efficacy. During the session, the counsellor and participant reviewed the personalized feedback, discussing the participant's drinking profile in relation to peer norms and risk of later problems. The goal was to motivate the participant to reduce high-risk drinking. the focus of the session was on the discussion of the feedback to motivate change, rather than on providing strategies for change.
	Provider	-
	Digital platform	Internet.
	Location	UK

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Doumas DM; Workman C; Smith D; Navarro A; Reducing high-risk drinking in mandated college students: Evaluation of two personalized normative feedback interventions. 2011 Jun;40(4):376-85.</td></tr>
<tr><td>Study name</td><td colspan="2">Reducing high-risk drinking in mandated college students: Evaluation of two personalized normative feedback interventions</td></tr>
<tr><td rowspan="5"></td><td>Duration</td><td>e-CHUG takes 30 minutes to complete.</td></tr>
<tr><td>Intensity</td><td>One session.</td></tr>
<tr><td>Tailoring/adaptation</td><td>The intervention is tailored according the amount the participant drinks.</td></tr>
<tr><td>Planned treatment fidelity</td><td>-</td></tr>
<tr><td>Actual treatment fidelity</td><td>-</td></tr>
<tr><td>Follow up</td><td>Other details</td><td>-</td></tr>
<tr><td>Follow up</td><td colspan="2">6-month follow up</td></tr>
<tr><td>Data collection</td><td colspan="2">2 measures of alcohol consumption were recorded: weekly drinking quantity, binge drinking frequency and peak alcohol consumption. Quantity of alcohol was assessed using a modified version of the Daily Drinking Questionnaire where users note how much they drunk on each day of the week. Frequency of binge drinking was assessed by the item asking participants to indicate how often they drank 5 or more drinks in a row for males (4 or more for females) in the past two weeks. Peak alcohol consumption was assessed by an item asking participants to indicate the number of drinks consumed on the occasion on which they drank the most the previous month.
Alcohol-related consequences were assessed using the Rutgers Alcohol Problem Index (RAPI). The RAPI is a 23-item self-administered screening tool used to measure adolescent problem drinking. Participants were asked the number of times in the past 30 days they experienced each of 23 negative consequences as a result of drinking. responses were measured on a 5-point scale ranging from never to more than 10 times. The score was recorded as a sum of the 23 items.</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td colspan="2">Drinking outcomes at 12 months.
<table>
<tr><td></td><td>SWF (n=47)</td><td>CWF (n=36)</td></tr>
<tr><td>Primary outcome</td><td></td><td></td></tr>
<tr><td rowspan="3">Peak alcohol consumption past month, mean (SD)</td><td>Baseline:
9.91 (6.40)</td><td>Baseline:
10.75 (6.32)</td></tr>
<tr><td>6 months:
9.81 (6.67)</td><td>6 months:
9.34 (6.89)</td></tr>
<tr><td colspan="2">Time x group: Wilks’ Lambda = .99, F(1, 81) = 0.72, p = .40, eta2 = .01</td></tr>
<tr><td rowspan="3">Alcohol-related consequences past 30 days, mean (SD)</td><td>Baseline:
3.46 (3.37)</td><td>Baseline:
5.07 (6.42)</td></tr>
<tr><td>6 months:
4.04 (5.72)</td><td>6 months:
4.54 (5.54)</td></tr>
<tr><td colspan="2">Time x group: Wilks’ Lambda = .99, F(1, 81) = 0.80, p < .38, eta2 = .01</td></tr>
<tr><td rowspan="2">Weekly drinking quantity, mean (SD)</td><td>Baseline:
8.94 (8.17)</td><td>Baseline:
11.8 (9.67)</td></tr>
<tr><td>6 months:
11.9 (10.62)</td><td>6 months:
9.89 (10.86)</td></tr>
</table></td></tr>
</table>

<table>
<tr><td>Bibliographic reference/s</td><td colspan="3">Doumas DM; Workman C; Smith D; Navarro A; Reducing high-risk drinking in mandated college students: Evaluation of two personalized normative feedback interventions. 2011 Jun;40(4):376-85.</td></tr>
<tr><td>Study name</td><td colspan="3">Reducing high-risk drinking in mandated college students: Evaluation of two personalized normative feedback interventions</td></tr>
<tr><td></td><td colspan="3"><table>
<tr><td></td><td colspan="2">Time x Group: Wilks' Lambda = .94, F(1, 81) = 4.94, p < .03, eta2 = .06</td></tr>
<tr><td rowspan="3">Binge drinking frequency, previous 2 weeks mean (SD)</td><td>Baseline:
1.23 (1.40)</td><td>Baseline:
1.64 (1.61)</td></tr>
<tr><td>6 months:
2.34 (2.37)</td><td>6 months:
1.81 (2.03)</td></tr>
<tr><td colspan="2">Time x Group: Wilks' Lambda = .95, F(1, 81) = 3.91, p < .05, eta2 = .05.</td></tr>
</table></td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td colspan="3">None reported.</td></tr>
<tr><td>Statistical Analysis</td><td colspan="3">To examine whether students in the CWF group would report significantly greater reductions in drinking and alcohol-related consequences relative to those in the SWF group at the follow-up, a series of repeated measures analyses of variance (ANOVA) were conducted. The two independent variables in the analysis were Time (baseline; follow-up) and Group (SWF; CWF). The four drinking measures included as dependent variables were quantity of weekly drinking, binge drinking frequency, peak alcohol consumption, and alcohol-related consequences.</td></tr>
<tr><td>Risk of bias (ROB)
Overall ROB</td><td colspan="3">Outcome name<table>
<tr><th>Outcome</th><th>Judgement (Low / High / some concerns)</th><th>Comments</th></tr>
<tr><td>Risk of bias arising from the randomisation process</td><td>Some concerns</td><td>Randomisation done via computer. Unclear how allocation was delivered or when allocation was done, before or after randomisation. Study reported no baseline differences between groups according to chi squared and t tests but does not publish the results.</td></tr>
<tr><td>Risk of bias due to deviations from intended interventions (assignment)</td><td>Some concerns</td><td>No attempt to conceal or hide the groups from the participants. Counsellors in the face-to-face group and helpers in the self-guided group were aware of the intervention.</td></tr>
<tr><td>Risk of bias due to deviations from intended interventions (adherence)</td><td>High risk</td><td>No attempt to conceal or hide the groups from the participants. Counsellors in the face-to-face group and helpers in the self-guided group were aware of the intervention. No analyses conducted to address high attrition.</td></tr>
<tr><td>Missing outcome data</td><td>Some concerns</td><td>No appropriate analyses conducted to address missing data. Participants who completed the study reported a higher</td></tr>
</table></td></tr>
</table>

Bibliographic reference/s	**Doumas DM; Workman C; Smith D; Navarro A; Reducing high-risk drinking in mandated college students: Evaluation of two personalized normative feedback interventions. 2011 Jun;40(4):376-85.**		
Study name	Reducing high-risk drinking in mandated college students: Evaluation of two personalized normative feedback interventions		
			frequency of binge drinking than those who did not complete the study.
	Risk of bias in measurement of the outcome	Low risk	Unclear if participants (who were self-recording) knew about their assignment but it is likely but there is no clear "control" so bias unlikely.
	Risk of bias in selection of the reported result	Some concerns	No protocol identified.
	Other sources of bias		
	Overall Risk of Bias	High risk	
	Other outcome details		
Source of funding			
Comments			
Additional references			
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences	x	
	Feedback and monitoring	x	
	Goals and planning		
	Social support		
	Self-belief	x	
	Comparison of outcomes	x	
	Identity		
	Shaping knowledge	x	
	Regulation		
	Comparison of behaviour	x	

Epton 2014

Bibliographic reference/s	**Epton T; Norman P; Dadzie AS; Harris PR; Webb TL; Sheeran P; Julious SA; Ciravegna F; Brennan A; Meier PS; Naughton D; Petroczi A; Kruger J; Shah I; A theory-based online health behaviour intervention for new university students (U@Uni): results from a randomised controlled trial. 2011 Jun;36(6):654-9.**
Study name	A theory-based online health behaviour intervention for new university students (U@Uni): results from a randomised controlled trial
Registration	Current Controlled Trials, ISRCTN67684181
Study type	RCT

<table>
<tr><td>Bibliographic reference/s</td><td colspan="3">Epton T; Norman P; Dadzie AS; Harris PR; Webb TL; Sheeran P; Julious SA; Ciravegna F; Brennan A; Meier PS; Naughton D; Petroczi A; Kruger J; Shah I; A theory-based online health behaviour intervention for new university students (U@Uni): results from a randomised controlled trial. 2011 Jun;36(6):654-9.</td></tr>
<tr><td>Study name</td><td colspan="3">A theory-based online health behaviour intervention for new university students (U@Uni): results from a randomised controlled trial</td></tr>
<tr><td>Study dates</td><td colspan="3">September 2012 – March 2012</td></tr>
<tr><td>Objective</td><td colspan="3">To assess the efficacy of the U@Uni health behaviour intervention, delivered shortly before students started university with 1- and 6-month follow-up.</td></tr>
<tr><td>Country/ Setting</td><td colspan="3">UK</td></tr>
<tr><td>Number of participants / clusters</td><td colspan="3">1445 (n=736 in intervention group; n=709 for control group)</td></tr>
<tr><td>Attrition</td><td colspan="3">Intervention = 291 (39%) lost at 6 months.
Control = 241 (34%) lost at 6 months.</td></tr>
<tr><td>Participant /community characteristics.</td><td colspan="3"><table>
<tr><th></th><th>Intervention</th><th>Control</th></tr>
<tr><td>Gender, %female</td><td>61.55</td><td>55.15</td></tr>
<tr><td>Age, mean (SD)</td><td>18.76</td><td>19.04</td></tr>
<tr><td>White British</td><td>65.98</td><td>67.42</td></tr>
<tr><td>White other</td><td>6.97</td><td>5.95</td></tr>
<tr><td>Mixed</td><td>2.46</td><td>3.97</td></tr>
<tr><td>Asian and Asian British</td><td>8.61</td><td>8.64</td></tr>
<tr><td>Black and Black British</td><td>2.46</td><td>2.27</td></tr>
<tr><td>Chinese</td><td>12.16</td><td>10.48</td></tr>
<tr><td>Other</td><td>1.37</td><td>1.27</td></tr>
</table></td></tr>
<tr><td>Method of allocation</td><td colspan="3">Randomisation was conducted by the random function on SurveyGizmo; allocation were given to participants after they completed the baseline questionnaire.</td></tr>
<tr><td>Inclusion criteria</td><td colspan="3">Undergraduates starting at the University of Sheffield in September 2012</td></tr>
<tr><td>Exclusion criteria</td><td colspan="3">None reported.</td></tr>
<tr><td>Intervention</td><td>TIDieR Checklist criteria</td><td>Details</td></tr>
<tr><td></td><td>Brief Name</td><td>U@Uni</td></tr>
<tr><td></td><td>Rationale/theory/Goal</td><td>Interactive website-based intervention will change and improve health behaviours in undergraduates in their first few months of university.</td></tr>
<tr><td></td><td>Materials used</td><td>Website-based intervention.</td></tr>
<tr><td></td><td>Procedures used</td><td>Participants in the intervention arm were asked to complete a profile for U@Uni. Theory-based persuasive messages were developed to encourage regular exercise and fruit and vegetable intake, and to discourage binge drinking and smoking. The basis for the intervention was self-affirmation manipulation. Participants were presented with a list of eight commonly held personal values (sense of humour,</td></tr>
</table>

Bibliographic reference/s	**Epton T; Norman P; Dadzie AS; Harris PR; Webb TL; Sheeran P; Julious SA; Ciravegna F; Brennan A; Meier PS; Naughton D; Petroczi A; Kruger J; Shah I; A theory-based online health behaviour intervention for new university students (U@Uni): results from a randomised controlled trial. 2011 Jun;36(6):654-9.**	
Study name	A theory-based online health behaviour intervention for new university students (U@Uni): results from a randomised controlled trial	
		academic achievement, relations with family and friends, social skills, spontaneity, artistic skills/aesthetic appreciation, religion/faith/spirituality, and respect/decency/manners) and asked to select their most important value (or provide their own) and to briefly explain why the value was important to them. Developed on the basis of formative work that identified the key behavioural, normative and control beliefs associated with intentions to perform each of the four health behaviours in new university students. The messages included a mixture of text and videos, as well as links to other relevant material. Motivators for changing each health behaviour would be displayed when going through the online resources. These resources were available after they completed their profiles. The resource contained a planner that contained instruction to form implementation intentions. The planner comprised a series of dropdown menus that helped participants to form implementation intentions by asking them to identify (i) a good opportunity to act on their intentions (e.g., when tempted to binge drink) and (ii) a suitable response to their identified opportunity (e.g., to remind themselves that they have lectures tomorrow) for each of the four targeted health behaviours. Participants could access relevant information and more detailed information, if they wished. Intervention participants were emailed prior to the start of the second university semester and invited to download a smartphone app designed for the Android operating system from the U@Uni website. The app and the website were accessible to intervention participants throughout the academic year. All participants were asked to complete a follow-up questionnaire 1- and 6-months after starting university.
	Provider	-
	Digital platform	Internet.
	Location	UK
	Duration	4 weeks.
	Intensity	Not reported.
	Tailoring/adaptation	The resource has the participants' own motivators as banners throughout the activities.
	Planned treatment fidelity	-
	Actual treatment fidelity	-
	Other details	-

<table>
<tr><td>Bibliographic reference/s</td><td>Epton T; Norman P; Dadzie AS; Harris PR; Webb TL; Sheeran P; Julious SA; Ciravegna F; Brennan A; Meier PS; Naughton D; Petroczi A; Kruger J; Shah I; A theory-based online health behaviour intervention for new university students (U@Uni): results from a randomised controlled trial. 2011 Jun;36(6):654-9.</td></tr>
<tr><td>Study name</td><td>A theory-based online health behaviour intervention for new university students (U@Uni): results from a randomised controlled trial</td></tr>
<tr><td>Follow up</td><td>6-month follow up</td></tr>
<tr><td>Data collection</td><td>Data collection was taken through questionnaires filled in by the participants. Alcohol consumption was reported from the preceding week.
Engagement was measured by completion of self-affirmation task (the profile page), whether or not participants accessed the theory-based messages, and the number of implementation intentions that were formed.</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td>Drinking outcomes at 6 months.
<table>
<tr><td></td><td>Intervention (n=736)</td><td>Control (n=708)</td><td>P values</td></tr>
<tr><td>Primary outcome</td><td></td><td></td><td></td></tr>
<tr><td rowspan="3">Previous week alcohol consumption, mean (SD)</td><td>Baseline:
11.17 (18.72)</td><td>Baseline:
11.88 (18.54)</td><td></td></tr>
<tr><td>6 months:
13.01 (19.75)</td><td>6 months:
13.41 (19.65)</td><td>P = 0.737</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td rowspan="3">Binge drinking days in previous week,
mean (SD)</td><td>Baseline:
1.00 (1.04)</td><td>Baseline:
1.04 (1.14)</td><td></td></tr>
<tr><td>6 months:
1.16 (0.85)</td><td>6 months:
1.16 (0.89)</td><td>P = 0.973</td></tr>
<tr><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td>
<table>
<tr><td></td><td>Intervention (n=736)</td></tr>
<tr><td>Completed self-affirmation task, n (%)</td><td>383 (52)</td></tr>
<tr><td>Accessed health messages, n (%)</td><td>259 (25)</td></tr>
<tr><td>Made a plan, n (%)</td><td>8 (1)</td></tr>
<tr><td>Downloaded app, n (%)</td><td>15 (2)</td></tr>
</table></td></tr>
<tr><td>Statistical Analysis</td><td>The study assumed a 50% response rate to the initial email invite and 40% attrition at 6-month follow-up. With an anticipated 4,000 eligible participants, this would result in a final sample of 1,200 for the proposed analyses. It was calculated that the trial would have at least 80% power to detect a small effect size (d = 0.20) at a two-tailed significance level of .0127 (adjusted for multiple primary outcomes).
Analysis of the 6-month data was conducted using an intention-to-treat approach (i.e., data were included from all participants who completed at least one follow-up survey); missing data at 6-months were imputed from the 1-month follow-up data by carrying the last observation forward.</td></tr>
</table>

Bibliographic reference/s	**Epton T; Norman P; Dadzie AS; Harris PR; Webb TL; Sheeran P; Julious SA; Ciravegna F; Brennan A; Meier PS; Naughton D; Petroczi A; Kruger J; Shah I; A theory-based online health behaviour intervention for new university students (U@Uni): results from a randomised controlled trial. 2011 Jun;36(6):654-9.**		
Study name	A theory-based online health behaviour intervention for new university students (U@Uni): results from a randomised controlled trial		
	A series of analyses of covariance (ANCOVA) and logistic regression analyses were used to assess the impact of the intervention on performance of the targeted behaviours, controlling for corresponding baseline scores, gender, age and nationality (i.e., UK or non-UK). For primary outcomes, the bonferroni correction was used; thus statistical significance was declared if any of the primary endpoints were significant at .0127 to account for multiple tests. The analyses were repeated to (i) assess the effect of engagement with the intervention (per protocol analyses) and (ii) to assess the effect of moderators (with dichotomised moderators as additional IVs). Additional analyses were conducted to compare dropouts and completers on the baseline measures. These analyses were not adjusted.		
Risk of bias (ROB) **Overall ROB**	**Outcome name**		
	Outcome	**Judgement (Low / High / some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Low risk	Computer-generated sequence, participants emailed if in intervention arm.
	Risk of bias due to deviations from intended interventions (assignment)	Low risk	University setting, students may have spoken about the intervention to the control participants. Questionnaires and interventions completed by participants by computer. Intention to treat analyses conducted.
	Risk of bias due to deviations from intended interventions (adherence)	High risk	University setting, students may have spoken about the intervention to the control participants. Questionnaires and interventions completed by participants by computer. No appropriate analysis conducted to estimate effect of adhering to intervention.
	Missing outcome data	Low risk	High rate of attrition. Imputation done by last observation carried forward. No difference between responders and non-responders between arms.
	Risk of bias in measurement of the outcome	Some concerns	Done via computer on same tool. Knowledge of intervention received may have influenced outcome.
	Risk of bias in selection of the reported result	Some concerns	Protocol retrospectively registered.
	Other sources of bias		
	Overall Risk of Bias	High risk	
	Other outcome details		
Source of funding			

Bibliographic reference/s	**Epton T; Norman P; Dadzie AS; Harris PR; Webb TL; Sheeran P; Julious SA; Ciravegna F; Brennan A; Meier PS; Naughton D; Petroczi A; Kruger J; Shah I; A theory-based online health behaviour intervention for new university students (U@Uni): results from a randomised controlled trial. 2011 Jun;36(6):654-9.**	
Study name	A theory-based online health behaviour intervention for new university students (U@Uni): results from a randomised controlled trial	
Comments		
Additional references		
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences	
	Reward and threat	
	Repetition and substitution	
	Antecedents	
	Associations	
	Covert Learning	
	Natural Consequences	
	Feedback and monitoring	x
	Goals and planning	x
	Social support	
	Self-belief	
	Comparison of outcomes	x
	Identity	
	Shaping knowledge	
	Regulation	
	Comparison of behaviour	x

Hester 2012

Bibliographic reference/s	**Hester RK; Delaney HD; Campbell W; The college drinker's check-up: outcomes of two randomized clinical trials of a computer-delivered intervention. 2012 Jul 30;14(4):e98.**
Study name	The college drinker's check-up: outcomes of two randomized clinical trials of a computer-delivered intervention
Registration	Not found.
Study type	RCT
Study dates	September 2008 – March 2010
Objective	The objective of these two RCTs was to evaluate the effectiveness of the College Drinker's Check-up (CDCU) in reducing heavy drinking and alcohol-related problems in college students. Only the first experiment in this publication has a follow-up >6 months.
Country/ Setting	US
Number of participants / clusters	144 (n=65 for intervention; n=79 for control)
Attrition	Intervention: 6 (9%) lost by 6 months Control: 8 (10%) lost by 6 months

<table>
<tr><td>Bibliographic reference/s</td><td colspan="3">Hester RK; Delaney HD; Campbell W; The college drinker's check-up: outcomes of two randomized clinical trials of a computer-delivered intervention. 2012 Jul 30;14(4):e98.</td></tr>
<tr><td>Study name</td><td colspan="3">The college drinker's check-up: outcomes of two randomized clinical trials of a computer-delivered intervention</td></tr>
<tr><td>Participant /community characteristics.</td><td colspan="3"><table>
<tr><th></th><th>Intervention</th><th>Control</th></tr>
<tr><td>Gender, %female</td><td>37</td><td>38</td></tr>
<tr><td>Age, mean (SD)</td><td>23.19 (2.96)</td><td>23.40 (3.15)</td></tr>
<tr><td>1st year, n (%)</td><td>18 (28)</td><td>23 (29)</td></tr>
<tr><td>2nd year, n (%)</td><td>17 (26)</td><td>17 (22)</td></tr>
<tr><td>3rd year, n (%)</td><td>17 (26)</td><td>21 (27)</td></tr>
<tr><td>4th year, n (%)</td><td>10 (15)</td><td>13 (16)</td></tr>
<tr><td>5th, n (%)</td><td>3 (15)</td><td>5 (6)</td></tr>
<tr><td>Asian American</td><td>1 (1)</td><td>-</td></tr>
<tr><td>Black</td><td>6 (8)</td><td>2 (3)</td></tr>
<tr><td>Hawaiian/Pacific Islander</td><td>-</td><td>1 (1)</td></tr>
<tr><td>Mixed race</td><td>6 (8)</td><td>4 (6)</td></tr>
<tr><td>Native American</td><td></td><td>3 (5)</td></tr>
<tr><td>Non-hispanic White</td><td>40 (51)</td><td>40 (62)</td></tr>
<tr><td>Hispanic/Latino</td><td>26 (33)</td><td>15 (23)</td></tr>
</table></td></tr>
<tr><td>Method of allocation</td><td colspan="3">Participants were randomised by blocks on the basis of gender, year in school, ethnicity (Hispanic, non-Hispanic White, other) and resident status.</td></tr>
<tr><td>Inclusion criteria</td><td colspan="3">Self-identified college student drinkers who meet NIAAA’s criteria for heavy, episodic drinking (i.e. 4 + drinks per occasion for women, 5 + for men, at least once in the last two weeks and an estimated peak BAC of 80mg% or more)
Age range of 18–24</td></tr>
<tr><td>Exclusion criteria</td><td colspan="3">Being mandated to an intervention because of an alcohol policy infraction
Not having a significant other to corroborate their self-report of drinking
Anticipating not being available for follow-ups.</td></tr>
<tr><td>Intervention</td><td>TIDieR Checklist criteria</td><td>Details</td></tr>
<tr><td></td><td>Brief Name</td><td>College Drinker’s Check-up (CDCU)</td></tr>
<tr><td></td><td>Rationale/theory/Goal</td><td>To reduce hazardous drinking in heavy drinking university students via personalised feedback.</td></tr>
<tr><td></td><td>Materials used</td><td>Computer-based intervention.</td></tr>
<tr><td></td><td>Procedures used</td><td>Participants in the intervention arm complete a screening on the CDCU that provides personalised feedback on their drinking habits. There are 3 modules to work through:
Look at Your Drinking, which includes a decisional balance exercise, a comprehensive assessment of drinking and drug use, alcohol-related problems, and risk factors for future alcohol-related problems.
Get Feedback uses gender- and university-specific norms. Students receive feedback on the quantity and frequency of their drinking compared to their same gender fellow students at their</td></tr>
</table>

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Hester RK; Delaney HD; Campbell W; The college drinker's check-up: outcomes of two randomized clinical trials of a computer-delivered intervention. 2012 Jul 30;14(4):e98.</td></tr>
<tr><td>Study name</td><td colspan="2">The college drinker's check-up: outcomes of two randomized clinical trials of a computer-delivered intervention</td></tr>
<tr><td rowspan="9"></td><td></td><td>university, BAC feedback, and feedback on how their frequency of alcohol-related problems compares to other, same gender students at their school.
• Consider Your Options, extends the initial decisional balance exercise, asking users to rate the level of importance of the “good things” and the “not so good things” about their drinking. It also asks them how ready they are to change their drinking and takes their readiness into account in helping them develop a plan of action to reduce their drinking and risk for alcohol-related problems.
Control participants only completed assessment module of the CDCU.</td></tr>
<tr><td>Provider</td><td>-</td></tr>
<tr><td>Digital platform</td><td>Computer program</td></tr>
<tr><td>Location</td><td>US</td></tr>
<tr><td>Duration</td><td>35 minutes.</td></tr>
<tr><td>Intensity</td><td>1 session.</td></tr>
<tr><td>Tailoring/adaptation</td><td>The resource gives feedback based on participants self-reported consumption levels.</td></tr>
<tr><td>Planned treatment fidelity</td><td>-</td></tr>
<tr><td>Actual treatment fidelity</td><td>-</td></tr>
<tr><td>Other details</td><td>-</td></tr>
<tr><td>Follow up</td><td colspan="2">12-month follow up</td></tr>
<tr><td>Data collection</td><td colspan="2">Data collection was taken through phone screening done when students rang to ask about the study. Questions were about ethnicity, residential status, year in school, weight, and alcohol questions on peak alcohol consumption in the preceding 2 weeks and over how many hours. Screening was completed in clinic, if the participant met the study criteria. The Brief Symptom Inventory was used to assess psychological distress, not to screen out participants but to recommend counselling if necessary.
At baseline and 12-month follow-up, AUDIT score and Brief Drinker’s Profile were both used to assess problem drinking and quantity and frequency of drinking. Alcohol-related problems were measured using 19 questions from the Core Institute’s survey of drinking, drug use, and related problems, similar to the Rutgers Alcohol Problems Index; this set was called College Students Alcohol Problems (CSAP).
Outcomes reported were Standard Drinks per Week, Peak BAC in a Typical Week, Average Number of Drinks in two Heavy Episodes in the prior month, and Average Peak BAC in those two Heavy Episodes.</td></tr>
<tr><td>Critical outcomes measures and</td><td colspan="2">Drinking outcomes at 12 months.
<table>
<tr><td></td><td>Intervention</td><td>Control</td><td>P values</td></tr>
<tr><td>Primary outcome</td><td></td><td></td><td></td></tr>
</table></td></tr>
</table>

<table>
<tr><td>Bibliographic reference/s</td><td colspan="4">Hester RK; Delaney HD; Campbell W; The college drinker's check-up: outcomes of two randomized clinical trials of a computer-delivered intervention. 2012 Jul 30;14(4):e98.</td></tr>
<tr><td>Study name</td><td colspan="4">The college drinker's check-up: outcomes of two randomized clinical trials of a computer-delivered intervention</td></tr>
<tr><td>effect size. (time points)</td><td colspan="4"><table>
<tr><td rowspan="2">AUDIT-C score</td><td>Baseline:
5.26 (1.81)</td><td>Baseline:
5.36 (1.80)</td><td rowspan="2">Mean in two heavier episodes in previous month</td></tr>
<tr><td>6 months:
Not reported</td><td>6 months:
Not reported</td></tr>
<tr><td rowspan="3">Typical week alcohol consumption, mean (SD)</td><td>Baseline:
20.2 (13.5)</td><td>Baseline:
21.4 (12.7)</td><td></td></tr>
<tr><td>12 months:
9.2 (8.5)</td><td>12 months:
13.0 (11.8)</td><td>P = 0.044</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td rowspan="3">Mean no. drinks in 2 heavier episodes in previous month, mean (SD)</td><td>Baseline:
10.3 (4.9)</td><td>Baseline:
10.2 (3.7)</td><td></td></tr>
<tr><td>12 months:
5.9 (4.1)</td><td>12 months:
7.7 (5.2)</td><td>P = 0.021</td></tr>
<tr><td></td><td></td><td></td></tr>
</table></td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td colspan="4"></td></tr>
<tr><td>Statistical Analysis</td><td colspan="4">Average effect size for studies of interventions for college student drinking ranged from .20 to 1.00 yielding a mean between-group effect size of d = .46. Using an estimated correlation between pre and post levels of drinking at 0..45, a power of 0.8 could be achieved by using 61 subjects per group. Allowing for 15% attrition, sample size of 72 would achieve a power of 0.8 using α = 0.05 for between-group difference of one of the primary dependent variables covarying the pre-treatment assessment on that variable.
To account for inconsistency between episodes of binge drinking, correlation over time in measures of heavy drinking would be low, ANCOVAs were used for between-group differences. There were two follow-up periods, 1-month that collected data on 4 outcomes and 12-month follow-up collected data on 6 outcomes. Bonferroni adjustments were used at alpha levels of 0.5/4 = 0.125 or 0.05/6 = 0.0083.
To confirm if participants were reducing their drinking over time, a repeated measures ANOVA was conducted to test the effect of time.</td></tr>
<tr><td>Risk of bias (ROB)
Overall ROB</td><td colspan="4">Outcome name<table>
<tr><th>Outcome</th><th>Judgement (Low / High / some concerns)</th><th>Comments</th></tr>
<tr><td>Risk of bias arising from the randomisation process</td><td>Low risk</td><td>Randomisation occurred in characteristics blocks but not clear how randomisation was achieved. No baseline differences.</td></tr>
<tr><td>Risk of bias due to deviations from intended interventions (assignment)</td><td>Low risk</td><td>University setting, students may have spoken about the intervention to the control participants. Questionnaires and interventions completed by participants</td></tr>
</table></td></tr>
</table>

Bibliographic reference/s	**Hester RK; Delaney HD; Campbell W; The college drinker's check-up: outcomes of two randomized clinical trials of a computer-delivered intervention. 2012 Jul 30;14(4):e98.**		
Study name	The college drinker's check-up: outcomes of two randomized clinical trials of a computer-delivered intervention		
			by computer. Intention to treat analyses conducted.
	Risk of bias due to deviations from intended interventions (adherence)	Low risk	University setting, students may have spoken about the intervention to the control participants. Questionnaires and interventions completed by participants by computer. Appropriate analysis conducted to estimate effect of adhering to intervention. Not possible to deviate from assigned group.
	Missing outcome data	Low risk	Attrition below 10%.
	Risk of bias in measurement of the outcome	Some concerns	Done via computer on same tool. Knowledge of intervention received may have influenced outcome.
	Risk of bias in selection of the reported result	Some concerns	No registered protocol found.
	Other sources of bias		
	Overall Risk of Bias	Some concerns	
	Other outcome details		
Source of funding			
Comments			
Additional references			
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring		X
	Goals and planning		x
	Social support		
	Self-belief		
	Comparison of outcomes		X
	Identity		
	Shaping knowledge		x
	Regulation		
	Comparison of behaviour		x

LaBrie 2013

Bibliographic reference/s	**Labrie Joseph W; Lewis Melissa A; Atkins David C; Neighbors Clayton ; Zheng Cheng ; Kenney Shannon R; Napper Lucy E; Walter Theresa ; Kilmer Jason R; Hummer Justin F; Grossbard Joel ; Ghaidarov Tehniat M; Desai Sruti ; Lee Christine M; Larimer Mary E; RCT of web-based personalized normative feedback for college drinking prevention: are typical student norms good enough? 2013 Dec; 81(6): 1074-1086.**
Study name	RCT of web-based personalized normative feedback for college drinking prevention: are typical student norms good enough?
Registration	
Study type	RCT
Study dates	
Objective	To compare the efficacy of web-based personalised normative feedback (PNF) using one of eight increasingly specific reference groups (typical student and gender-, race-, Greek status-, gender-race-, gender-Greek status-, race-Greek status-, gender-race-Greek status-specific) compared against a web-based motivational feedback intervention derived from the well- established BASICS intervention (Brief Alcohol Screening and Intervention for College Students) and a generic feedback control.
Country/ Setting	USA
Number of participants / clusters	1831 n=187 in typical student norms n-184 in typical sex norms n=185 in typical Greek norms n=178 in typical race norms n=185 in typical sex, race norms n=187 in typical sex, Greek norms n=190 in typical race, Greek norms n=187 in typical sex, race, Greek norms n=184 in control n=183 in web BASICS n=184 not allocated to intervention, assessment only
Attrition	Typical student norms: 20 (11%) lost at 6 months; 20 (11%) lost at 12 months Typical sex norms: 22 (12%) lost at 6 months; 22 (12%) lost at 12 months Typical Greek norms: 22 (12%) lost at 6 months; 14 (8%) lost at 12 months Typical race norms: 16 (9%) lost at 6 months; 8 (4%) lost at 12 months Typical sex, race norms: 15 (8%) lost at 6 months; 19 (10%) lost 12 months Typical sex, Greek norms: 22 (12%) lost at 6 months; 26 (14%) lost at 12 months Typical race, Greek norms: 26 (14%) lost at 6 months; 26 (14%) lost at 12 months Typical sex, race, Greek norms: 19 (10%) lost at 6 months; 22 (12%) lost at 12 months Control: 20 (11%) lost at 6 months; 19 (10%) lost at 12 months Web BASICS: 14 (8%) lost at 6 months; 16 (9%) lost at 12 months Not allocated to intervention, assessment only: 22 (12%) lost at 12 months
Participant /community characteristics.	

	Participants
Gender, %female	56.7
Age, mean (SD)	19.92 (1.3)
Caucasian, %	75.7

Bibliographic reference/s	**Labrie Joseph W; Lewis Melissa A; Atkins David C; Neighbors Clayton ; Zheng Cheng ; Kenney Shannon R; Napper Lucy E; Walter Theresa ; Kilmer Jason R; Hummer Justin F; Grossbard Joel ; Ghaidarov Tehniat M; Desai Sruti ; Lee Christine M; Larimer Mary E; RCT of web-based personalized normative feedback for college drinking prevention: are typical student norms good enough? 2013 Dec; 81(6): 1074-1086.**	
Study name	RCT of web-based personalized normative feedback for college drinking prevention: are typical student norms good enough?	
	AUDIT score, mean (SD)	14.7 (4.7)
Method of allocation	Web-based algorithm was used to randomise students after baseline study was completed. A stratified, block randomization was used (Hedden, Woolson, & Malcolm, 2006), in which assignment was stratified by Greek organization membership (yes/no), sex (male/female), race (Asian/Caucasian), and total drinks per week (10 or less, 11 or more). Thus, each treatment condition was comprised of approximately 82 men and 100 women, 43 Asian-Americans and 139 Caucasians, and 55 Greek-affiliated students and 127 non-Greek students.	
Inclusion criteria	≥1 heavy drinking episode in the preceding month (4/5 drinks in a session [men/women]) Identifying as Caucasian or Asian.	
Exclusion criteria	Not reported.	
Intervention	**TIDieR Checklist criteria**	**Details**
	Brief Name	e-SBI (no specific name given)
	Rationale/theory/Goal	Showing participants data that is more specific to them will lead a to a greater reduction in either consumption of alcohol than providing general normative feedback. The study aimed to provide participants with normative feedback based on their gender, Greek status, and ethnicity to achieve this.
	Materials used	Web-based intervention. Of the ten conditions examined in the present study, eight provided normative feedback based on differing levels of specificity of the reference group. Condition 1 was provided normative information about the typical student at the same university. Conditions 2 thru 4 were provided matched normative information at one level of specificity based on the participant's gender, Greek status, or race. Conditions 5 thru 7 were presented two levels of specificity for students at the same university matched to participant's gender and race (e.g., typical female Asian), gender and Greek status (e.g., typical male Greek-affiliated student), or race and Greek status (e.g., typical Caucasian Greek-affiliated student). The eighth condition provided participants with three levels of specificity for students at the same university matched to participant's gender, race and Greek status (e.g., typical female, Asian, Greek-affiliated student). A ninth condition presented Web-BASICS. Finally, the tenth condition was a repeated assessment control group which received generic non-alcohol related normative feedback about the typical student's

Bibliographic reference/s	**Labrie Joseph W; Lewis Melissa A; Atkins David C; Neighbors Clayton ; Zheng Cheng ; Kenney Shannon R; Napper Lucy E; Walter Theresa ; Kilmer Jason R; Hummer Justin F; Grossbard Joel ; Ghaidarov Tehniat M; Desai Sruti ; Lee Christine M; Larimer Mary E; RCT of web-based personalized normative feedback for college drinking prevention: are typical student norms good enough? 2013 Dec; 81(6): 1074-1086.**	
Study name	RCT of web-based personalized normative feedback for college drinking prevention: are typical student norms good enough?	
		frequency of text messaging, downloading music, and playing video games on their campus.
	Procedures used	After completing the baseline survey, participants were immediately provided with Web-based feedback, depending on their randomized condition. Three feedback categories were used: Personalized Normative Feedback (PNF, conditions 1–8 described above), Web-BASICS (condition 9), and generic control feedback (condition 10). Participants were given the option to print their feedback. The PNF contained four pages of information in text and bar graph format. Separate graphs, each including three bars, were used to present information regarding the number of drinking days per week, average drinks per occasion, and total average drinks per week for (a) one's own drinking behaviour, (b) their reported perceptions of the reference group's drinking behaviour on their respective campus, at the level of specificity defined by their assigned intervention condition, and (c) actual college student drinking norms for the specified reference group. Actual norms were derived from large representative surveys conducted on each campus in the prior year as a formative step in the trial. Participants were also provided with their percentile rank comparing them with other students on their respective campus for the specified reference group (e.g., "Your percentile rank is 99%, this means that you drink as much or more than 99% of other college students on your campus"). The Web-BASICS feedback contained a total of twenty-six pages of interactive comprehensive motivational information based on assessment results, modelled from the efficacious in-person BASICS intervention. It addressed quantity and frequency of alcohol use, past month peak alcohol consumption, estimated blood alcohol content (BAC), and provided information regarding standard drink size, how alcohol affects men and women differently, oxidation, alcohol effects, reported alcohol-related experiences, estimated calories and financial costs based on reported weekly use, estimated level of tolerance, risks based on family history, risks for alcohol problems, and tips for reducing risks while drinking as well as alternatives to drinking. The feedback also included PNF utilizing typical

Bibliographic reference/s	**Labrie Joseph W; Lewis Melissa A; Atkins David C; Neighbors Clayton ; Zheng Cheng ; Kenney Shannon R; Napper Lucy E; Walter Theresa ; Kilmer Jason R; Hummer Justin F; Grossbard Joel ; Ghaidarov Tehniat M; Desai Sruti ; Lee Christine M; Larimer Mary E; RCT of web-based personalized normative feedback for college drinking prevention: are typical student norms good enough? 2013 Dec; 81(6): 1074-1086.**	
Study name	RCT of web-based personalized normative feedback for college drinking prevention: are typical student norms good enough?	
		student drinking norms. Participants were given the option to click links throughout the feedback to obtain additional information on standard drink size, sex differences and alcohol use, oxidation, biphasic tips, hangovers, alcohol costs, tolerance, and protective factors, as well as provided with a link to a BAC calculator. The generic control feedback, which was presented to those in the assessment control condition, contained three pages of information in text and bar graph format. Separate graphs, each including two bars, were used to present information regarding the number of hours spent texting, number of hours spent downloading music, and number of hours spent playing video games per week for (a) one's own behaviour, and (b) actual college student behaviour. Participants were also provided with their percentile rank comparing them with other students on their respective campus (e.g., "Your percentile rank is 60%, this means that you text as much or more than 60% of other college students on your campus").
	Provider	-
	Digital platform	Computer program
	Location	USA
	Duration	1 session of unknown length
	Intensity	1 session
	Tailoring/adaptation	The resource was feedback based on participants self-reported consumption levels.
	Planned treatment fidelity	-
	Actual treatment fidelity	-
	Other details	-
Follow up	12-month follow up	
Data collection	Participants were invited to take a series of online follow-up surveys at one-, three-, six-, and 12-month time-points after their online intervention. A standard drink definition was included for all alcohol consumption measures (i.e., 12 oz. beer, 10 oz. wine cooler, 4 oz. wine, 1 oz. 100 proof [1 ¼ oz. 80 proof] liquor). The Daily Drinking Questionnaire measured one of the primary outcomes: the number of drinks per week. Students were asked to consider a typical week in the last month and indicate the number of drinks they typically consumed on each day of the week. Students' responses were summed across each of the seven days to form a composite of total weekly drinks. The Quantity/Frequency Index is an assessment of alcohol use (Baer, 1993) that measures participant's drinking during the past month. Participants were asked to think about the occasion when they	

<table>
<tr><td>Bibliographic reference/s</td><td>Labrie Joseph W; Lewis Melissa A; Atkins David C; Neighbors Clayton ; Zheng Cheng ; Kenney Shannon R; Napper Lucy E; Walter Theresa ; Kilmer Jason R; Hummer Justin F; Grossbard Joel ; Ghaidarov Tehniat M; Desai Sruti ; Lee Christine M; Larimer Mary E; RCT of web-based personalized normative feedback for college drinking prevention: are typical student norms good enough? 2013 Dec; 81(6): 1074-1086.</td></tr>
<tr><td>Study name</td><td>RCT of web-based personalized normative feedback for college drinking prevention: are typical student norms good enough?</td></tr>
<tr><td></td><td>drank the most and to report how many drinks they consumed on that occasion. In addition, participants reported how many days they drank alcohol in the past month. Response options ranged from 0 (I do not drink at all) to 7 (Every day).
The 25-item Rutgers Alcohol Problem Index (RAPI) assessed the frequency of alcohol-related negative consequences. Response options ranged from 0 (never) to 4 (10 or more times). The items included “Passed out or fainted suddenly”, “Caused shame or embarrassment to someone” and “Felt physically or psychologically dependent on alcohol”. Items were summed to create a composite score for the analysis.</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td>Drinking outcomes at baseline, 6 and 12 months, from top to bottom in each outcome row.
<table>
<tr><th></th><th>C*</th><th>WB</th><th>PNF Typ* †</th><th>PNF Ra</th><th>PNF GN</th><th>PNF Gr</th><th>PNF Ra/ Gr</th><th>PNF Gn/ Ra</th><th>PNF Gn/ Gr</th><th>PNF Gn/Ra/ Gr †</th></tr>
<tr><td>Primary outcome</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="3">Peak no. drinks previous 30 days, mean (SD)</td><td>8.8 (3.9)</td><td>8.6 (3.7)</td><td>8.2 (3.8)</td><td>8.8 (4.1)</td><td>8.5 (4.1)</td><td>8.8 (4.2)</td><td>9.1 (3.8)</td><td>8.5 (4.2)</td><td>8.3 (3.7)</td><td>8.5 (4.0)</td></tr>
<tr><td>7.4 (4.4)</td><td>6.8 (4.2)</td><td>6.2 (4.4)</td><td>6.8 (4.9)</td><td>7.6 (4.7)</td><td>7.5 (4.4)</td><td>7.3 (4.1)</td><td>7.0 (4.7)</td><td>6.6 (4.5)</td><td>7.2 (4.2)</td></tr>
<tr><td>7.1 (3.9)</td><td>7.0 (4.2)</td><td>6.5 (4.2)</td><td>6.7 (4.2)</td><td>7.5 (4.3)</td><td>7.8 (4.5)</td><td>6.7 (4.3)</td><td>7.0 (3.7)</td><td>7.0 (4.7)</td><td>6.6 (4.3)</td></tr>
<tr><td rowspan="3">No. days drinking previous 30 days, mean (SD)</td><td>6.3 (4.3)</td><td>6.7 (4.7)</td><td>6.5 (4.7)</td><td>7.6 (5.7)</td><td>6.3 (4.6)</td><td>6.9 (4.5)</td><td>63 (4.1)</td><td>6.4 (4.7)</td><td>6.5 (4.8)</td><td>6.5 (4.7)</td></tr>
<tr><td>6.0 (4.5)</td><td>5.9 (4.4)</td><td>5.0 (3.8)</td><td>6.1 (5.5)</td><td>5.8 (4.6)</td><td>6.0 (4.6)</td><td>5.9 (4.9)</td><td>5.8 (4.3)</td><td>5.6 (5.3)</td><td>6.2 (4.9)</td></tr>
<tr><td>6.2 (4.8)</td><td>6.0 (4.7)</td><td>5.8 (4.9)</td><td>5.7 (5.1)</td><td>5.8 (4.4)</td><td>6.3 (4.9)</td><td>6.2 (5.2)</td><td>6.3 (5.1)</td><td>5.8 (5.2)</td><td>6.0 (5.1)</td></tr>
<tr><td rowspan="2">Total weekly drinks, mean (SD)</td><td>10.4 (9.5)</td><td>10.7 (8.1)</td><td>10.3 (10.0)</td><td>11.4 (9.8)</td><td>10.2 (8.5)</td><td>11.8 (9.4)</td><td>11.5 (10.1)</td><td>10.6 (9.1)</td><td>9.9 (7.7)</td><td>10.3 (9.4)</td></tr>
<tr><td>9.4 (10.2)</td><td>9.4 (8.3)</td><td>7.5 (7.3)</td><td>10.0 (10.9)</td><td>10.5 (11.7)</td><td>9.8 (11.7)</td><td>9.8 (8.2)</td><td>9.4 (8.8)</td><td>7.8 (8.1)</td><td>9.5 (9.1)</td></tr>
</table></td></tr>
</table>

<table>
<tr><td>Bibliographic reference/s</td><td>Labrie Joseph W; Lewis Melissa A; Atkins David C; Neighbors Clayton ; Zheng Cheng ; Kenney Shannon R; Napper Lucy E; Walter Theresa ; Kilmer Jason R; Hummer Justin F; Grossbard Joel ; Ghaidarov Tehniat M; Desai Sruti ; Lee Christine M; Larimer Mary E; RCT of web-based personalized normative feedback for college drinking prevention: are typical student norms good enough? 2013 Dec; 81(6): 1074-1086.</td></tr>
<tr><td>Study name</td><td>RCT of web-based personalized normative feedback for college drinking prevention: are typical student norms good enough?</td></tr>
<tr><td></td><td>
<table>
<tr><td></td><td>9.0 (8.4)</td><td>8.5 (8.7)</td><td>7.9 (6.9)</td><td>8.4 (8.1)</td><td>9.9 (9.2)</td><td>9.9 (9.4)</td><td>8.9 (7.8)</td><td>8.7 (7.1)</td><td>7.7 (6.4)</td><td>8.5 (9.1)</td></tr>
<tr><td>-ve cons</td><td>3.3 (3.4)</td><td>4.4 (5.8)</td><td>3.9 (5.1)</td><td>3.8 (4.3)</td><td>4.1 (4.7)</td><td>4.8 (5.3)</td><td>3.9 (4.3)</td><td>4.3 (5.7)</td><td>4.1 (4.4)</td><td>3.4 (3.6)</td></tr>
<tr><td></td><td>2.8 (5.4)</td><td>4.8 (8.6)</td><td>2.3 (4.3)</td><td>4.3 (8.1)</td><td>3.9 (6.5)</td><td>4.4 (7.4)</td><td>3.7 (7.0)</td><td>3.8 (7.5)</td><td>4.4 (11.5)</td><td>2.6 (3.9)</td></tr>
<tr><td></td><td>2.6 (5.0)</td><td>3.7 (7.6)</td><td>2.4 (4.1)</td><td>3.5 (7.5)</td><td>2.6 (4.0)</td><td>4.0 (8.5)</td><td>3.3 (6.2)</td><td>4.3 (9.2)</td><td>3.4 (8.4)</td><td>2.3 (4.5)</td></tr>
</table>
C = control; WB = Web-BASICS; Typ = Typical student referent; Ra = Race specific referent; Gn = gender specific referent; Gr = Greek specific referent; Ra/Gr = Race/Greek specific referent; Gn/Ra = Gender/Race specific referent; Gn/Gr = Gender / Greek specific referent; Gn/Ra/Gr = Gender / Race / Greek specific referent; -ve cons = negative consequences; *: compared in control vs no intervention control analyses; †: compared in intervention vs other intervention analyses
</td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td></td></tr>
<tr><td>Statistical Analysis</td><td>Randomization excluded the possibility of baseline confounders, and there were no concerns about treatment comparability at baseline. Hence, models did not adjust for additional covariates. The proportion of missing data were consistent across treatment conditions, and sensitivity analysis found no differences based on missing data status. A priori power analyses given the current design indicated that treatment condition sample sizes of n = 141 or greater (accounting for planned attrition of 20%) would yield power of .80 or better to detect treatment contrasts of d = 0.20 (e.g., small effect sizes). All analyses were done in R v2.11.1 (R Development Core Team, 2010).
The efficacy of PNF compared to web-BASICS and Control conditions, and the efficacy of PNF conditions varying in specificity of feedback, were tested using a quasi-Poisson generalized linear model fit by generalized estimating equations.</td></tr>
<tr><td>Risk of bias (ROB)
Overall ROB</td><td>Outcome name
<table>
<tr><th>Outcome</th><th>Judgement (Low / High / some concerns)</th><th>Comments</th></tr>
<tr><td>Risk of bias arising from the randomisation process</td><td>Low risk</td><td>Web-based randomisation process concealed from allocation.</td></tr>
</table>
</td></tr>
</table>

Bibliographic reference/s	**Labrie Joseph W; Lewis Melissa A; Atkins David C; Neighbors Clayton ; Zheng Cheng ; Kenney Shannon R; Napper Lucy E; Walter Theresa ; Kilmer Jason R; Hummer Justin F; Grossbard Joel ; Ghaidarov Tehniat M; Desai Sruti ; Lee Christine M; Larimer Mary E; RCT of web-based personalized normative feedback for college drinking prevention: are typical student norms good enough? 2013 Dec; 81(6): 1074-1086.**		
Study name	RCT of web-based personalized normative feedback for college drinking prevention: are typical student norms good enough?		
	Risk of bias due to deviations from intended interventions (assignment)	Low risk	Participants were not aware it was a trial. Feedback was based on the allocation, which was not disclosed to participants. Intervention provided by computer. Intention to treat analyses performed.
	Risk of bias due to deviations from intended interventions (adherence)	High risk	Feedback was based on the allocation, which was not disclosed to participants. Intervention provided by computer. Failure to implement intervention could affect outcome and no analyses conducted that assessed the effect of adhering to intervention.
	Missing outcome data	Some concerns	Attrition at 10%-20%. Sensitivity analyses found no differences based on missing data.
	Risk of bias in measurement of the outcome	Low risk	Same computerised tool/survey for both intervention groups. Participants were also blinded.
	Risk of bias in selection of the reported result	Some concerns	No registered protocol found.
	Other sources of bias		
	Overall Risk of Bias	High risk	
	Other outcome details		
Source of funding			
Comments			
Additional references			
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		
	Natural Consequences		
	Feedback and monitoring		X
	Goals and planning		
	Social support		
	Self-belief		

Bibliographic reference/s	**Labrie Joseph W; Lewis Melissa A; Atkins David C; Neighbors Clayton ; Zheng Cheng ; Kenney Shannon R; Napper Lucy E; Walter Theresa ; Kilmer Jason R; Hummer Justin F; Grossbard Joel ; Ghaidarov Tehniat M; Desai Sruti ; Lee Christine M; Larimer Mary E; RCT of web-based personalized normative feedback for college drinking prevention: are typical student norms good enough? 2013 Dec; 81(6): 1074-1086.**	
Study name	RCT of web-based personalized normative feedback for college drinking prevention: are typical student norms good enough?	
	Comparison of outcomes	X
	Identity	
	Shaping knowledge	
	Regulation	
	Comparison of behaviour	x

Norman 2018

Bibliographic reference/s	**Norman P; Cameron D; Epton T; Webb TL; Harris PR; Millings A; Sheeran P; A randomized controlled trial of a brief online intervention to reduce alcohol consumption in new university students: Combining self-affirmation, theory of planned behaviour messages, and implementation intentions. 2018 Feb;23(1):108-127.**
Study name	A randomized controlled trial of a brief online intervention to reduce alcohol consumption in new university students: Combining self-affirmation, theory of planned behaviour messages, and implementation intentions
Registration	Current Controlled Trials ISRCTN84252967
Study type	RCT
Study dates	-
Objective	To combine self-affirmation manipulation (SAM), theory of planned behaviour (TPB) delivered by viewed information, and implementation intention (imp int) in a 2x2x2 factorial design to produce less favourable cognitions about binge drinking and reduce alcohol consumption in students starting university, before drinking patterns become established.
Country/ Setting	UK
Number of participants / clusters	2951 were randomly assigned to one of 8 groups. As it is a factorial design study consisting of 3 factors, each arm contains a different combination of factors. 1. n=369 in no SAM, no information, no imp int (control) 2. n=368 in SAM, no information, no imp int 3. n=369 in no SAM, information, no imp int 4. n=369 in no SAM, information, imp int 5. n=368 in SAM, no information, no imp int 6. n=370 in SAM, no information, imp int 7. n=369 in SAM, information, no imp int 8. n=369 in SAM, information, imp int
Attrition	Participants were randomised and sent a link to their assigned intervention. Lost at immediate follow-up means they completed the baseline questionnaire but did not access the link sent and therefore did complete the intervention. 1. No SAM, no information, no imp int: 5 (1%) lost at immediate follow-up; 259 (70%) lost at 6 months 2. SAM, no information, no imp int: 65 (18%) lost at immediate follow-up; 257 (70%) lost at 6 months

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Norman P; Cameron D; Epton T; Webb TL; Harris PR; Millings A; Sheeran P; A randomized controlled trial of a brief online intervention to reduce alcohol consumption in new university students: Combining self-affirmation, theory of planned behaviour messages, and implementation intentions. 2018 Feb;23(1):108-127.</td></tr>
<tr><td>Study name</td><td colspan="2">A randomized controlled trial of a brief online intervention to reduce alcohol consumption in new university students: Combining self-affirmation, theory of planned behaviour messages, and implementation intentions</td></tr>
<tr><td></td><td colspan="2">3. No SAM, information, no imp int: 9 (2%) lost at immediate follow-up; 248 (67%) lost at 6 months
4. No SAM, information, imp int: 71 (19%) lost at immediate follow-up; 264 (72%) lost at 6 months
5. SAM, no information, no imp int: 18 (5%) lost at immediate follow-up; 257 (70%) lost at 6 months
6. SAM, no information, imp int: 25 (7%) lost at immediate follow-up; 257 (69%) lost at 6 months
7. SAM, information, no imp int: 24 (7%) lost at immediate follow-up; 254 (7%) lost at 6 months
8. SAM, information, imp int: 52 (14%) lost at immediate follow up; 263 (71%) lost at 6 months</td></tr>
<tr><td>Participant /community characteristics.</td><td colspan="2"><table><tr><th></th><th>Participants</th></tr><tr><td>Gender, %female</td><td>53.8</td></tr><tr><td>Age, mean (SD)</td><td>18.76 (1.94)</td></tr><tr><td>Ethnicity, %white</td><td>74.5</td></tr><tr><td>Ethnicity, %asian</td><td>12.5</td></tr><tr><td>Ethnicity, %other/not indicated</td><td>16.2</td></tr></table></td></tr>
<tr><td>Method of allocation</td><td colspan="2">Randomisation sequence generation not reported. Allocation occurred after participants completed the baseline questionnaire and were directed to their assigned intervention.</td></tr>
<tr><td>Inclusion criteria</td><td colspan="2">Not reported.</td></tr>
<tr><td>Exclusion criteria</td><td colspan="2">Not reported.</td></tr>
<tr><td>Intervention</td><td>TIDieR Checklist criteria</td><td>Details</td></tr>
<tr><td></td><td>Brief Name</td><td></td></tr>
<tr><td></td><td>Rationale/theory/Goal</td><td>To assess which combination of self-affirmation manipulation, messages about binge drinking and implementation intentions would best reduce alcohol consumption and frequency in new university students.</td></tr>
<tr><td></td><td>Materials used</td><td>Web-based intervention. Likely that participants completed their assigned intervention via a URL sent after they completed the baseline questionnaire or were directed to their assigned intervention after completing the questionnaire – unclear.</td></tr>
<tr><td></td><td>Procedures used</td><td>Self-affirmation manipulation. The self-affirmation manipulation comprised an adapted version of the Values in Action Strength Scale. Participants rated the extent to which 32 positive traits, characteristics or qualities (e.g., I always try to keep my word) applied to themselves on</td></tr>
</table>

Bibliographic reference/s	**Norman P; Cameron D; Epton T; Webb TL; Harris PR; Millings A; Sheeran P; A randomized controlled trial of a brief online intervention to reduce alcohol consumption in new university students: Combining self-affirmation, theory of planned behaviour messages, and implementation intentions. 2018 Feb;23(1):108-127.**	
Study name	A randomized controlled trial of a brief online intervention to reduce alcohol consumption in new university students: Combining self-affirmation, theory of planned behaviour messages, and implementation intentions	
		five-point response scales (Very much like me – Very much unlike me). **Messages about binge drinking**. The TPB-based messages were developed on the basis on the three phases of formative research conducted by Epton et al. (2015). The messages targeted three key beliefs about binge drinking; namely, that engaging in binge drinking at university is fun, that engaging in binge drinking at university has a negative impact on studies, and that having friends who binge drink increases the likelihood of binge drinking at university. The first message ("You can have fun at university without binge drinking") outlined various ways to meet new people and have fun without binge drinking, such as joining societies (259 words). The second message ("Binge drinking is not good for your studies") provided information about the impact of binge drinking on academic outcomes, and outlined different ways by which this may occur, including missing lectures and reduced cognitive functioning (208 words). The third message ("Resisting social pressures to binge drink") highlighted the fact that most students do not binge drink on a regular basis and that there are many reasons not to, even if friends are, including remembering that it is "your decision", the financial cost of binge drinking and being able to look after one's friends (216 words). Each message was followed by a brief video (approx. 1 minute) of students talking about the respective issues. **Implementation intentions**. Participants were asked to form up to three if-then plans to avoid binge drinking at university. Participants were presented with brief text highlighting the importance of making plans to avoid binge drinking at university that included two example plans (e.g., If I feel under social pressure to binge drink, then I will say that I have something important to do and leave). Next, participants completed a table with text boxes for the "if" and "then" components of up to three plans. They were instructed to pay particular attention to the specific situations in which the plans would be implemented.
	Provider	-
	Digital platform	Website.

Bibliographic reference/s	**Norman P; Cameron D; Epton T; Webb TL; Harris PR; Millings A; Sheeran P; A randomized controlled trial of a brief online intervention to reduce alcohol consumption in new university students: Combining self-affirmation, theory of planned behaviour messages, and implementation intentions. 2018 Feb;23(1):108-127.**	
Study name	A randomized controlled trial of a brief online intervention to reduce alcohol consumption in new university students: Combining self-affirmation, theory of planned behaviour messages, and implementation intentions	
	Location	UK
	Duration	Messages about binge drinking intervention took around 5 minutes to complete; unknown duration of other interventions
	Intensity	1 session
	Tailoring/adaptation	The resource was feedback based on participants self-reported consumption levels and drivers.
	Planned treatment fidelity	-
	Actual treatment fidelity	-
	Other details	-
Follow up	6-month follow up	
Data collection	Alcohol consumption. At baseline, participants were asked to "think of a typical week and what you would have to drink on each day of the week". They were then presented with a table and asked to write the type and amount of each drink that they typically consumed on each day of the week (e.g., 1 shot of vodka, 2 pints of cider). Responses were converted into units (= 8 grams of pure alcohol) using an online calculator (NHS, 2014b). Both the total number of units consumed and the number of binge drinking sessions (i.e., 8 or more units of alcohol in a single session for men, and 6 or more units for women) in a typical week were calculated, and comprised the primary outcomes. The same procedure was used to assess alcohol consumption at university, except that at one-week after starting university participants were asked to "think about what you had to drink on each day during Intro Week", and at one- and six-month follow-up participants were asked to think about a typical week during their first month and six months at university. At six-month follow-up, participants also completed the 10-item Alcohol Use Disorders Identification Test (AUDIT), which is a widely used screening tool for identifying hazardous and harmful patterns of alcohol consumption. Scores on the AUDIT can range between 0 and 40 with scores of 8 or more being indicative of possible harmful alcohol use. Cognitions about binge drinking. Participants completed two-item direct measures of TPB constructs, using seven-point response scales, immediately after the intervention and one and six months after starting university: intention (e.g., Do you intend to engage in binge drinking at university? Definitely do not– Definitely do, αs = .91, .90, .90), affective attitude (e.g., Engaging in binge drinking at university would be… Unpleasant–Pleasant, αs = .93, .93, .93), cognitive attitude (e.g., Engaging in binge drinking at university would be… Harmful–Beneficial, αs = .83, .85, .86), subjective norms (e.g., People who are important to me would disapprove/approve of me engaging in binge drinking at university, Disapprove–Approve αs = .76, .77, .75), descriptive norms (e.g., Most students engage in binge drinking at university, Unlikely–Likely, αs = .85, .84, .80), self-efficacy (e.g., If I wanted to, engaging in binge drinking at university would be… Difficult–Easy, αs = .87, .88, .85), and perceived control (e.g., How much control do you have over whether or not you engage in binge drinking at university, No control–Complete control, αs = .69, .78, .81). Single items assessed the extent to which participants endorsed each of the three beliefs targeted by the messages (i.e., Engaging in binge drinking at	

<table>
<tr><td>Bibliographic reference/s</td><td>Norman P; Cameron D; Epton T; Webb TL; Harris PR; Millings A; Sheeran P; A randomized controlled trial of a brief online intervention to reduce alcohol consumption in new university students: Combining self-affirmation, theory of planned behaviour messages, and implementation intentions. 2018 Feb;23(1):108-127.</td></tr>
<tr><td>Study name</td><td>A randomized controlled trial of a brief online intervention to reduce alcohol consumption in new university students: Combining self-affirmation, theory of planned behaviour messages, and implementation intentions</td></tr>
<tr><td></td><td>university would be fun, Engaging in binge drinking at university would have a negative impact on my studies, My friends engaging in binge drinking would make my binge drinking at university more likely) on seven-point response scales (Unlikely–Likely).</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td>Drinking outcomes at baseline and 6 months (outcomes numbered as above)
<table>
<tr><th></th><th>1•</th><th>2*</th><th>3†</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8*†•</th></tr>
<tr><td>Primary outcome</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">Total weekly units, mean (SE; SD)</td><td>1 wk: 23.75 (2.15; 41.30)</td><td>1 wk: 19.15 (2.07; 39.71)</td><td>1 wk: 24.39 (2.09; 40.15)</td><td>1 wk: 23.46 (2.18; 41.88)</td><td>1 wk: 19.15 (2.07)</td><td>1 wk: 22.12 (2.14)</td><td>1 wk: 23.44 (1.95)</td><td>1 wk: 24.72 (2.12; 40.72)</td></tr>
<tr><td>6m: 14.81 (1.40; 26.89)</td><td>6m: 10.24 (1.35; 25.90)</td><td>6m: 12.84 (1.36; 26.12)</td><td>6m: 14.11 (1.42; 27.28)</td><td>6m: 10.24 (1.35)</td><td>6m: 11.72 (1.39)</td><td>6m: 10.89 (1.27)</td><td>6m: 12.77 (1.38; 26.51)</td></tr>
<tr><td rowspan="2">No. days binge drinking in past month, mean (SE; SD)</td><td>1 wk: 1.49 (0.18; 3.46)</td><td>1 wk: 1.14 (0.17; 3.26)</td><td>1 wk: 1.61 (0.17; 3.27)</td><td>1 wk: 1.35 (0.18; 3.46)</td><td>1 wk: 1.14 (0.17)</td><td>1 wk: 1.32 (0.18)</td><td>1 wk: 1.61 (0.16)</td><td>1 wk: 1.66 (0.18; 3.46)</td></tr>
<tr><td>6m: 1.03 (0.12; 2.31)</td><td>6m: 0.67 (0.11; 2.11)</td><td>6m: 0.90 (0.11; 2.11)</td><td>6m: 0.91 (0.21; 4.03)</td><td>6m: 0.67 (0.11)</td><td>6m: 0.71 (0.11)</td><td>6m: 0.77 (0.10)</td><td>6m: 0.90 (0.11; 2.11)</td></tr>
</table>
Values are adjusted means controlling for baseline scores.
1. No SAM, no information, no imp int
2. SAM, no information, no imp int
3. No SAM, information, no imp int
4. No SAM, information, imp int
5. SAM, no information, no imp int
6. SAM, no information, imp int
7. SAM, information, no imp int
8. SAM, information, imp int
•: compared in intervention vs no intervention control analyses (SAM, information on binge drinking and implementation intention vs assessment only)
*: compared in intervention vs active control analyses (Self-affirmation manipulation, information on binge drinking and implementation intention vs self-affirmation manipulation)</td></tr>
</table>

Bibliographic reference/s	**Norman P; Cameron D; Epton T; Webb TL; Harris PR; Millings A; Sheeran P; A randomized controlled trial of a brief online intervention to reduce alcohol consumption in new university students: Combining self-affirmation, theory of planned behaviour messages, and implementation intentions. 2018 Feb;23(1):108-127.**
Study name	A randomized controlled trial of a brief online intervention to reduce alcohol consumption in new university students: Combining self-affirmation, theory of planned behaviour messages, and implementation intentions
	†: compared in intervention vs other intervention analyses (information on binge drinking plus self-affirmative manipulation and implementation intention vs information on binge drinking only)
Important outcomes measures and effect size. (time points)	
Statistical Analysis	Levels of attrition between randomisation and completion of the immediate postintervention measures differed between conditions, A 2(7, N = 2951) = 149.28, p < .001; attrition was higher among participants allocated to form implementation intentions (14.4%) than among those who were not (3.8%). Participants lost to follow-up were more likely to be male (80.1%) than female (71.5%), A 2(1, N = 2658) = 25.89, p < 001, non-White (84.0%) than White (72.6%), A 2(1, N = 2676) = 36.00, p < 001, and to consume more units of alcohol at baseline (M = 8.42, SD = 11.10) than those who completed the follow-up questionnaires (M = 7.36, SD = 10.25), t(2652) = 2.16, p = .03. All other comparisons were non-significant. Two 2 (self-affirmation: yes, no) × 2 (messages: yes, no) × 2 (implementation intention: yes, no) × 3 (time: one week, one month, six months) mixed-measures ANCOVAs were conducted, with units of alcohol and frequency of binge drinking assessed after one week, one month, and six months at university as the (repeated-measures) dependent variables, and corresponding baseline measures entered as covariates. A series of 2 (self-affirmation: yes, no) × 2 (messages: yes, no) × 2 (implementation intention: yes, no) × 3 (time: immediate, one month, six months) mixed-measures ANOVAs was conducted, with measures of cognitions about binge drinking assessed immediately after the intervention, and after one and six months at university as the (repeated-measures) dependent variables. Mediation analyses assessed whether the effects of the message condition on alcohol consumption were mediated by changes in cognitions about binge drinking. Message condition was entered as an independent variable along with the measures of the TPB assessed immediately post-intervention as potential mediators and alcohol consumption at baseline as a covariate. Alcohol consumption at six-month follow-up was the dependent variable.
Risk of bias (ROB) **Overall ROB**	**Outcome name**

Outcome	Judgement (Low / High / some concerns)	Comments
Risk of bias arising from the randomisation process	Low risk	No description of how sequence was generated. Allocation sequence most likely concealed due to method of allocation.

Bibliographic reference/s	**Norman P; Cameron D; Epton T; Webb TL; Harris PR; Millings A; Sheeran P; A randomized controlled trial of a brief online intervention to reduce alcohol consumption in new university students: Combining self-affirmation, theory of planned behaviour messages, and implementation intentions. 2018 Feb;23(1):108-127.**		
Study name	A randomized controlled trial of a brief online intervention to reduce alcohol consumption in new university students: Combining self-affirmation, theory of planned behaviour messages, and implementation intentions		
	Risk of bias due to deviations from intended interventions (assignment)	Low risk	Participants were not aware of the trial but students may have spoken about the intervention they received. Intervention delivered by computer. Intention to treat analyses conducted.
	Risk of bias due to deviations from intended interventions (adherence)	High risk	Participants were not aware of the trial but students may have spoken about the intervention they received. Intervention delivered by computer. No possibility of deviating from intervention. Last observation carried forward to address attrition.
	Missing outcome data	Some concerns	Attrition at 50%+. Raised to some concerns due to amount of attrition and report of analyses do not explicitly say that missing outcome data had no effect, only reporting factors that were different and that all other factors had no effect.
	Risk of bias in measurement of the outcome	Low risk	Same computerised tool/survey for both intervention groups. Participants were also blinded.
	Risk of bias in selection of the reported result	Some concerns	Adheres to prospectively registered plan.
	Other sources of bias		
	Overall Risk of Bias	High risk	
	Other outcome details		
Source of funding			
Comments			
Additional references			
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		

Bibliographic reference/s	**Norman P; Cameron D; Epton T; Webb TL; Harris PR; Millings A; Sheeran P; A randomized controlled trial of a brief online intervention to reduce alcohol consumption in new university students: Combining self-affirmation, theory of planned behaviour messages, and implementation intentions. 2018 Feb;23(1):108-127.**	
Study name	A randomized controlled trial of a brief online intervention to reduce alcohol consumption in new university students: Combining self-affirmation, theory of planned behaviour messages, and implementation intentions	
	Natural Consequences	x
	Feedback and monitoring	x
	Goals and planning	x
	Social support	
	Self-belief	x
	Comparison of outcomes	x
	Identity	
	Shaping knowledge	x
	Regulation	
	Comparison of behaviour	x

Schulz 2013

Bibliographic reference/s	**Schulz DN, Candel MJ, Kremers SP, Reinwand DA, Jander A, de Vries H. Effects of a Web-based tailored intervention to reduce alcohol consumption in adults: randomized controlled trial. Journal of medical Internet research. 2013;15(9):e206.**
Study name	Effects of a Web-Based Tailored Intervention to Reduce Alcohol Consumption in Adults: Randomized Controlled Trial
Registration	ISRCTN91623132
Study type	RCT
Study dates	2010-2011
Objective	To assess whether a 3-session, Web-based tailored intervention is effective in reducing alcohol intake in high-risk adult drinkers and to compare 2 computer-tailoring feedback strategies (alternating vs summative) on behaviour change, dropout, and appreciation of the program.
Country/ Setting	Online, Germany
Number of participants / clusters	448 randomised Completed intervention: N=127 intervention (alternating condition) N=154 intervention (summative condition) N=135 control Completed follow-up at 6 months: N=75 intervention (alternating condition) N=106 intervention (summative condition) N=84 control

Bibliographic reference/s	**Schulz DN, Candel MJ, Kremers SP, Reinwand DA, Jander A, de Vries H. Effects of a Web-based tailored intervention to reduce alcohol consumption in adults: randomized controlled trial. Journal of medical Internet research. 2013;15(9):e206.**
Study name	Effects of a Web-Based Tailored Intervention to Reduce Alcohol Consumption in Adults: Randomized Controlled Trial
	For logistic regression analysis 180 respondents were required to be able to show a statistical power of 80%, at a 0.05 significance level. For linear regression analysis, 254 respondents were required.
Attrition	At the 6-month follow-up, loss to follow-up was 36.8% (165/448) and drop out was distributed equally across the 3 groups; however the drop out was significantly lower in respondents with the highest income compared to the lowest income.
Participant /community characteristics	

	Intervention (alternating) N=132	Intervention (summative) N=181	Control N=135
Age, mean (SD)	42.23 (15.06)	41.41 (16.16)	41.62 (15.92)
Gender, n (%)			
Male	69 (52.3)	104 (57.5)	80 (59.3)
Female	63 (47.7)	77 (42.5)	55 (40.7)
Education, n (%)			
Low	61 (47.3)	61 (38.9)	55 (40.7)
Medium	25 (19.4)	40 (25.5)	36 (26.7)
High	43 (33.3)	56 (35.7)	44 (32.6)
Income per month, n (%)			
<€1000	11 (8.3)	24 (13.3)	26 (19.3)
€1001-2000	41 (31.1)	30 (16.6)	35 (25.9)
€2001-4000	34 (25.8)	55 (30.4)	46 (34.1)
>€4000	19 (14.4)	12 (6.6)	12 (8.9)
Not reported	27 (20.5)	60 (33.1)	16 (11.9)
Employment status, n (%)			
Paid employment	89 (71.8)	97 (63.4)	83 (61.5)
No paid employment	35 (28.2)	56 (36.6)	52 (38.5)
Symptoms of depression			
CES-D10, mean (SD)	8.08 (5.46)	8.38 (5.05)	8.11 (4.68)
Score of ≥11, n (%)	39 (30.7)	44 (28.6)	37 (27.4)
Diseases, n (%)			
Diabetes mellitus	7 (5.2)	9 (5.0)	5 (3.7)
Stroke	1 (0.7)	3 (1.7)	4 (3.0)
Cardiac infarction	1 (0.7)	3 (1.7)	3 (2.2)
Angina pectoris	2 (1.5)	4 (2.2)	3 (2.2)
Cancer	0 (0.0)	4 (2.2)	2 (1.5)
High blood pressure	26 (19.3)	41 (22.7)	28 (20.7)
One or more diseases	35 (26.5)	55 (30.4)	38 (28.1)
Alcohol			
Nonadherence to guideline, n (%)	63 (47.7)	85 (49.7)	73 (54.9)
Weekly alcohol intake (standard units), mean (SD)	12.53 (10.99)	11.86 (9.70)	14.73 (13.05)

Bibliographic reference/s	**Schulz DN, Candel MJ, Kremers SP, Reinwand DA, Jander A, de Vries H. Effects of a Web-based tailored intervention to reduce alcohol consumption in adults: randomized controlled trial. Journal of medical Internet research. 2013;15(9):e206.**	
Study name	Effects of a Web-Based Tailored Intervention to Reduce Alcohol Consumption in Adults: Randomized Controlled Trial	
	Pregnant/breastfeeding and drinking, n (%) 8 (6.1) 14 (7.7) 9 (6.7) AUDIT (score ≥8), n (%) 102 (77.3) 141 (79.2) 108 (81.2) Habit (SRH1-12), mean (SD) 1.98 (0.79) 2.15 (0.79) 2.19 (0.86) Significant differences were found for baseline characteristics of income and habitual drinking.	
Method of allocation	Randomisation carried out by a computer.	
Inclusion criteria	Being a panel member of the online register of respondi - a sample willing to participate in online surveys and research studies Having computer/internet literacy Having a sufficient command of German 18 years or over Having an unhealthy drinking pattern (not complying with the guideline recommending no more than 1/2 (females/males) glasses of alcohol per day; drinking on more than 5 days per week; having a score higher than 7 on the Alcohol Use Disordered Identification Test, or; currently trying to become pregnant, drinking alcohol while pregnant or breastfeeding or trying to get one's partner pregnant.)	
Exclusion criteria	-	
Intervention	**TIDieR Checklist criteria**	**Details**
	Brief Name	Alcohol within the limits?!
	Rationale/theory/Goal	I-change model (builds on theory of planned behaviour, social cognitive theory, health belief model and the transtheoretical model).
	Materials used	Online website; a full overview of their advice was given to each participant at the end of a session (equivalent to approximately 7 to 10 A4 pages of text, including pictures and graphics)
	Procedures used	Personalised advice was presented immediately on the respondent computer screen consisting of 5 parts, each focusing on a different psychosocial construct of the model. Stage 1: addressed concepts of knowledge and awareness – gave information about the German alcohol guidelines and assessed if the guideline was being met by using comparative/normative feedback. Scores were depicted graphically using a traffic light system. To increase knowledge, relation between alcohol and various disease was explained and tailored information about pregnancy was given if applicable. Stage 2: personalised feedback concerning the perceived pros and cons of alcohol drinking as

Bibliographic reference/s	**Schulz DN, Candel MJ, Kremers SP, Reinwand DA, Jander A, de Vries H. Effects of a Web-based tailored intervention to reduce alcohol consumption in adults: randomized controlled trial. Journal of medical Internet research. 2013;15(9):e206.**	
Study name	Effects of a Web-Based Tailored Intervention to Reduce Alcohol Consumption in Adults: Randomized Controlled Trial	
		perceived by the respondent, with the goal of creating a positive attitude toward not drinking above the guidelines. Stage 3: tailored messages focusing on the importance of social influence on drinking. Stage 4: preparatory actions plans were defined to prepare the intended behaviour change. Stage 5: focused on self-efficacy and coping plans by identifying difficult situations and how to cope with them. Additional personalised advice was given again at 3 months and at the 6 months follow-up. The intervention group was divided into 2 sub-groups – 1 group received questions and personal advice alternately; 1 group were given all personal advice at once after having answered all the questions. The text was the same for both subgroups.
	Provider	-
	Digital platform	Online
	Location	Online, Germany
	Duration	Unclear
	Intensity	3 sessions
	Tailoring/adaptation	Information tailored to the respondent health status was given about alcohol and pregnancy and the possible influence of drinking behaviour on children, if applicable. Tailored messages on the importance of social influence, focusing on the respondents partner, family, friends and colleagues was given. Personalised tips were given on how to deal with the perceived difficult situations to overcome potential barriers and the situations and plans were summarised. Additional personalised advice at 3 and 6 months was based on the respondents previous scores for psychosocial constructs.
	Planned treatment fidelity	-
	Actual treatment fidelity	10% randomised to intervention did not complete the intervention
	Other details	-
Comparison	**TIDieR Checklist criteria**	**Details**
	Brief Name	Alcohol questionnaire
	Rationale/theory/Goal	-
	Materials used	Questionnaire

Bibliographic reference/s	**Schulz DN, Candel MJ, Kremers SP, Reinwand DA, Jander A, de Vries H. Effects of a Web-based tailored intervention to reduce alcohol consumption in adults: randomized controlled trial. Journal of medical Internet research. 2013;15(9):e206.**	
Study name	Effects of a Web-Based Tailored Intervention to Reduce Alcohol Consumption in Adults: Randomized Controlled Trial	
	Procedures used	Unknown
	Provider	Online
	Digital platform	Online
	Location	Online, Germany
	Duration	Unknown
	Intensity	Unknown
	Tailoring/adaptation	None
	Modifications	None
	Planned treatment fidelity	-
	Actual treatment fidelity	-
	Other details	-
Follow up	6 months	
Data collection	Weekly alcohol intake was measured by the Dutch 5-item Quantity-Frequency-Variability questionnaire; AUDIT was used to identify problem drinking. Habitual drinking behaviour was assessed by the 12-item Self-Report Habit Index questionnaire. Knowledge regarding the national alcohol guideline was assessed by 1 question: "What do you think I the standard acceptable alcohol amount per day and per week?" with 14 answering options. A knowledge test was included in the final measurement, including 9 questions. Attitude was assessed by 6 pros and 6 cons of alcohol intake. Social influence was assessed by dividing this concept into norm, modelling, and support with 1 question asked to evaluate each aspect. Self-efficacy was assessed by 6 items regarding difficult social, emotional and routine situations "I'm able to met the alcohol guideline when I'm… at a party; …when I feel stressed", etc. Preparatory plans were assessed by 4 items such as "I'm planning on taking less money with me when I go out so I can't drink as much" Coping plans were assessed by 6 items such as "I've made a plan to drink more than 1 glass…" Motivational stage of drinking in accordance with the alcohol guideline was assessed by applying the Transtheoretical Model of Behaviour Change. 6 items were used to assess if respondents suffered from diabetes mellitus, angina pectoris, cancer, or high blood pressure or had suffered a stroke or	

<table>
<tr><td>Bibliographic reference/s</td><td>Schulz DN, Candel MJ, Kremers SP, Reinwand DA, Jander A, de Vries H. Effects of a Web-based tailored intervention to reduce alcohol consumption in adults: randomized controlled trial. Journal of medical Internet research. 2013;15(9):e206.</td></tr>
<tr><td>Study name</td><td>Effects of a Web-Based Tailored Intervention to Reduce Alcohol Consumption in Adults: Randomized Controlled Trial</td></tr>
<tr><td></td><td>cardiac infarction. Symptoms of depression were assessed by means of the 10-item Center for Epidemiologic Studies Depression Scale (CES-D10).</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td>
<table>
<tr><td></td><td>OR</td><td>p-value</td><td>95% CI</td></tr>
<tr><td>Achieving ‘low-risk’ drinking status at 6 months – completers only[1]</td><td>2.65</td><td>0.02</td><td>1.14 to 6.16</td></tr>
<tr><td>Achieving ‘low-risk’ drinking status at 6 months – intention to treat[1]</td><td>1.11</td><td>0.72</td><td>0.63 to 1.98</td></tr>
</table>
OR >1 favours intervention. Data not available to calculate RR.
[1] Logistic regression analysis comparing intervention and control groups

<table>
<tr><td></td><td>β</td><td>p-value</td><td>95% CI</td></tr>
<tr><td>Weekly number of drinks – completers only[1]</td><td>-0.12</td><td>0.05</td><td>-7.96 to 0.03</td></tr>
<tr><td>Weekly number of drinks – intention to treat[1]</td><td>-1.15</td><td>0.43</td><td>-4.02 to 1.72</td></tr>
</table>
[1] Linear regression analysis comparing intervention and control groups

<table>
<tr><td></td><td colspan="2">Baseline</td><td colspan="2">6-months</td><td>MD (SD)</td><td rowspan="2">Effect size</td></tr>
<tr><td></td><td>Intervention</td><td>Control</td><td>Intervention</td><td>Control</td><td></td></tr>
<tr><td>% complying with alcohol guidelines – completers only (n=197)</td><td>50.8</td><td>52.2</td><td>71.9</td><td>58.0</td><td></td><td>0.42</td></tr>
<tr><td>Number of alcoholic drinks per week</td><td>12.8</td><td>14.8</td><td>8.9</td><td>14.4</td><td>I: 3.9 (9.96)
C: 0.4 (19.54)</td><td>0.26</td></tr>
</table>
</td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td>-</td></tr>
<tr><td>Statistical Analysis</td><td>Linear regression for continuous variables and chi-square tests for discrete variables used to show adequate randomisation in terms of demographics and drinking behaviour.
Effect sizes were calculated based on means and odds ratios (Cohen’s d). Differences in effect between groups were explored by logistic and linear regression analysis. Baseline variables were tested individually to assess their impact on results.</td></tr>
</table>

Bibliographic reference/s	**Schulz DN, Candel MJ, Kremers SP, Reinwand DA, Jander A, de Vries H. Effects of a Web-based tailored intervention to reduce alcohol consumption in adults: randomized controlled trial. Journal of medical Internet research. 2013;15(9):e206.**		
Study name	Effects of a Web-Based Tailored Intervention to Reduce Alcohol Consumption in Adults: Randomized Controlled Trial		
	Complete case and intention to treat analysis performed (using multiple imputation was used to fill in missing values). Sensitivity analysis also performed to compare this to last observation carried forward method.		
Risk of bias (ROB) **Overall ROB**	**Outcome name**		
	Outcome	**Judgement (Low / High / some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Some concerns	Randomisation performed by a random number generator. Some baseline differences were seen for income and habitual drinking. Differences accounted for in analysis.
	Risk of bias due to deviations from intended interventions (assignment)	Low	Participants were blinded to intervention or control group, however due to the nature of the intervention, it is likely that there was inference of group allocation. No deviations were identified.
	Risk of bias due to deviations from intended interventions (adherence)	Low	Adherence to the intervention was adequate. Possible that questionnaires at baseline influenced both groups to seek additional care for alcohol use, but this was equal across groups.
	Missing outcome data	Low	Attrition was reasonable, with equal attrition across treatment groups at 6-months follow-up. There were differences in attrition rates amongst high- and low-income earners. Intention to treat analysis was performed using multiple imputation analysis.
	Risk of bias in measurement of the outcome	Some concerns	Validated alcohol use questionnaires used. Detailed explanation included in study to describe outcome assessment. Some bias may be present due to self-report, however this is somewhat mitigated by participant blinding (although likely that intervention group may be inferred leading to biased self-report)
	Risk of bias in selection of the reported result	Low	No evidence of reporting bias.
	Other sources of bias	-	
	Overall Risk of Bias	Some concerns	
Source of funding	CAPHRI School for Public Health and Primary Care.		
Comments	Bonus points which are exchangeable for cash, vouchers or a donation were given to respondents who filled in the full baseline questionnaire.		

Bibliographic reference/s	**Schulz DN, Candel MJ, Kremers SP, Reinwand DA, Jander A, de Vries H. Effects of a Web-based tailored intervention to reduce alcohol consumption in adults: randomized controlled trial. Journal of medical Internet research. 2013;15(9):e206.**	
Study name	Effects of a Web-Based Tailored Intervention to Reduce Alcohol Consumption in Adults: Randomized Controlled Trial	
Additional references	-	
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences	
	Reward and threat	
	Repetition and substitution	
	Antecedents	
	Associations	
	Covert Learning	
	Natural Consequences	X
	Feedback and monitoring	
	Goals and planning	X
	Social support	
	Self-belief	
	Comparison of outcomes	
	Identity	
	Shaping knowledge	
	Regulation	
	Comparison of behaviour	x

Walters 2009

Bibliographic reference/s	**Walters ST; Vader AM; Harris TR; Field CA; Jouriles EN; Dismantling motivational interviewing and feedback for college drinkers: a randomized clinical trial. 2009 Feb;77(1):64-73.**
Study name	Dismantling motivational interviewing and feedback for college drinkers: a randomized clinical trial.
Registration	
Study type	RCT
Study dates	Autumn 2006 – Spring 2007
Objective	To assess the effectiveness of motivational interviewing (MI) and feedback, a combination of the two, and assessment only on reducing alcohol intake in university students.
Country/ Setting	US
Number of participants / clusters	279 Feedback only, n=67 Motivational interview only, n=70 (61 received intervention) Motivational interview with feedback, n=73 (63 received feedback) Assessment only, n=69
Attrition	Feedback only, 13 (19%) lost at 6 months Motivational interview only, 11 (16%) lost at 6 months Motivational interview with feedback, 6 (8%) lost at 6 months Assessment only, 8 (12%) lost at 6 months

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Walters ST; Vader AM; Harris TR; Field CA; Jouriles EN; Dismantling motivational interviewing and feedback for college drinkers: a randomized clinical trial. 2009 Feb;77(1):64-73.</td></tr>
<tr><td>Study name</td><td colspan="2">Dismantling motivational interviewing and feedback for college drinkers: a randomized clinical trial.</td></tr>
<tr><td>Participant /community characteristics.</td><td colspan="2"><table><tr><th></th><th>Participants</th></tr><tr><td>Gender, %female</td><td>64.2</td></tr><tr><td>Age, mean</td><td>19.8</td></tr><tr><td>Ethnicity, %white</td><td>84.6</td></tr><tr><td>University year, %first</td><td>41.2</td></tr><tr><td>University year, %second</td><td>21.2</td></tr><tr><td>University year, %third</td><td>21.9</td></tr><tr><td>University year, %fourth</td><td>15.8</td></tr></table></td></tr>
<tr><td>Method of allocation</td><td colspan="2">Randomization, stratified by sex and heavy drinking frequency (i.e., one heavy episode in the past 2 weeks vs. more than one heavy episode), was completed automatically after the students entered their screening data. Participants then received an email directing them to the online consent and baseline assessment battery. Participants and counsellors were not blinded to the group assignment.</td></tr>
<tr><td>Inclusion criteria</td><td colspan="2">≥18 years of age
At least one heavy drinking episode (4/5 [women/men] drinks in one session) in the preceding 2 weeks</td></tr>
<tr><td>Exclusion criteria</td><td colspan="2">Not reported.</td></tr>
<tr><td>Intervention</td><td>TIDieR Checklist criteria</td><td>Details</td></tr>
<tr><td></td><td>Brief Name</td><td>e-CHUG (computerised sessions only)</td></tr>
<tr><td></td><td>Rationale/theory/Goal</td><td>To assess the added benefit of MI on feedback, or vice versa, on reducing alcohol intake in university students.</td></tr>
<tr><td></td><td>Materials used</td><td>Web-based intervention.</td></tr>
<tr><td></td><td>Procedures used</td><td>Feedback—The personalized feedback was modified from the electronic-Check-Up to Go (e-CHUG; http://www.e-chug.com), a commercially-available feedback program. Using the information from a participant’s assessment, the feedback included: (1) a quantity/frequency summary of drinking behaviour (e.g., standard drinks consumed in the last 30-days, estimated peak BAC, caloric intake), (2) comparison to U.S. adult and campus norms, (3) level of risk (e.g., AUDIT score, tolerance, estimated genetic risk), (4) estimated dollar amount and percent of income spent on alcohol, and (5) local referral resources. For those students in the FBO condition, the feedback form was displayed immediately on the computer screen after the participant completed the baseline assessment. Those in the MIF condition received their feedback profile during the MI session.
In-person sessions—The in-person sessions were delivered by two Ph.D. level counsellors and five clinical psychology doctoral students. Each</td></tr>
</table>

Bibliographic reference/s	**Walters ST; Vader AM; Harris TR; Field CA; Jouriles EN; Dismantling motivational interviewing and feedback for college drinkers: a randomized clinical trial. 2009 Feb;77(1):64-73.**	
Study name	Dismantling motivational interviewing and feedback for college drinkers: a randomized clinical trial.	
		counsellor completed 40 hours of MI training (including lecture, role play and practice) and submitted four practice tapes prior to seeing participants. To insure fidelity, counsellors completed a checklist for each session and all sessions were videotaped for weekly supervision. Providers delivered both kinds of sessions (i.e., MIO and MIF). Sessions included the following elements: (1) Orienting the participant to the session and the limits of confidentiality; (2) Exploring the participant's drinking, including peak episodes and related problems; (3) Discussing ambivalence around drinking; (4) Utilizing the "Readiness Rulers" to elicit importance and confidence language; (5) Discussing change in the hypothetical or concrete; and if appropriate (6) Developing a plan for change. The counsellor also provided the participant with a list of campus and community resources related to alcohol.
	Provider	-
	Digital platform	Website/in-person sessions
	Location	UK
	Duration	Not reported
	Intensity	1 session
	Tailoring/adaptation	The resource was feedback based on participants self-reported consumption levels and beliefs.
	Planned treatment fidelity	-
	Actual treatment fidelity	-
	Other details	-
Follow up	6-month follow up	
Data collection	Measures were completed online at a baseline assessment, as well as at 3- and 6-month follow-up assessments. Outcome measures included alcohol consumption and alcohol related problems; potential mediators included normative perceptions and protective behaviours; potential moderators included readiness to change, drinking severity, and demographic variables. Alcohol consumption was assessed using a 7-day drinking calendar modified from the Daily Drinking Questionnaire (R. L. Collins, Parks, & Marlatt, 1985). Participants were asked to think about a typical week in the past month, and for each day, to estimate how many drinks they typically consumed on that day. To calculate peak blood alcohol concentration (BAC), participants also reported the number of standard drinks consumed and the duration of their heaviest drinking episode in the past month. We used this information, along with gender and weight, to calculate an estimated peak BAC. Alcohol-related problems in the past 3 months were measured by the 23-item Rutgers Alcohol Problem Index (RAPI). The RAPI has been shown to have good reliability among college students. Reliability in the present study was α=.87 for the total scale.	

<table>
<tr><td>Bibliographic reference/s</td><td>Walters ST; Vader AM; Harris TR; Field CA; Jouriles EN; Dismantling motivational interviewing and feedback for college drinkers: a randomized clinical trial. 2009 Feb;77(1):64-73.</td></tr>
<tr><td>Study name</td><td>Dismantling motivational interviewing and feedback for college drinkers: a randomized clinical trial.</td></tr>
<tr><td></td><td>Drinking severity was measured using the Alcohol Use Disorders Identification Test (AUDIT), which has shown adequate reliability and validity among college drinkers.</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td>Drinking outcomes at baseline and 6 months (outcomes numbered as above)
<table>
<tr><td></td><td>Feedback only*</td><td>MI only</td><td>MI with feedback</td><td>Control*</td></tr>
<tr><td>Primary outcome</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">Total weekly drinks, mean (SD)</td><td>Baseline: 14.27 (11.59)</td><td>Baseline: 14.29 (9.98)</td><td>Baseline: 17.81 (14.38)</td><td>Baseline: 15.28 (12.89)</td></tr>
<tr><td>6 months: 12.07 (12.31)</td><td>6 months: 11.59 (9.55)</td><td>6 months: 10.19 (8.71)</td><td>6 months: 12.92 (14.16)</td></tr>
<tr><td rowspan="2">Alcohol-related problems past 3 months, mean (SD)</td><td>Baseline: 5.99 (6.01)</td><td>Baseline: 6.37 (6.50)</td><td>Baseline: 6.67 (6.92)</td><td>Baseline: 6.38 (6.35)</td></tr>
<tr><td>6 months: 3.72 (4.70)</td><td>6 months: 5.41 (7.28)</td><td>6 months: 4.06 (4.96)</td><td>6 months: 5.77 (6.11)</td></tr>
</table>
Values are adjusted means controlling for baseline scores.
*: compared in intervention vs no intervention control analyses</td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td></td></tr>
<tr><td>Statistical Analysis</td><td>A power analysis indicated that 55 participants per condition would be sufficient to detect an effect size of .50.
To ensure fidelity, a random subset of videotaped sessions (30 MIF and 30 MIO) was coded by two independent coders using the Motivational Interviewing Treatment Integrity Code 3.0. Sixteen tapes were double coded and intraclass correlation coefficients (ICC) were calculated to measure inter-rater reliability. The ICCs for the MITI counsellor global scores were all in the “fair” category (evocation=0.48, collaboration=0.47, autonomy/support=0.45, direction=0.45, empathy=0.59, and global MI spirit=0.58). The mean MITI counsellor global scores for evocation, collaboration, autonomy/support, direction, empathy, and global MI spirit were at or above a beginning proficiency level. As a conservative test, separate t tests were computed on each of the 5 MITI counsellor global scores. Results indicated no statistically significant differences between the two conditions on any of these scores (all p>0.05).
At baseline, a first component accounted for 67% of the variance, reflecting roughly equal contributions from each of the three standardized drinking measures. This first component was used as the composite measure of drinking outcome. To preserve comparability of the composite measure over time, the coefficients from the baseline analysis were applied to the unstandardized measures at each follow-up assessment. Therefore, the composite measure at baseline is a standard score (with mean 0 and standard deviation 1) and is expressed in the same units at the 3-month and 6-month follow-ups.</td></tr>
</table>

Bibliographic reference/s	**Walters ST; Vader AM; Harris TR; Field CA; Jouriles EN; Dismantling motivational interviewing and feedback for college drinkers: a randomized clinical trial. 2009 Feb;77(1):64-73.**		
Study name	Dismantling motivational interviewing and feedback for college drinkers: a randomized clinical trial.		
	The effects of the interventions on the composite drinking variable were analyzed using a mixed linear model, a type of multilevel model that allows for the use of partial data from subjects who did not participate in both follow-ups. Subject was a random effect, the intervention conditions were fixed between-subject effects, and time (baseline and the two follow-ups) was the within-subject effect. To address the questions described in the introduction, conditions were compared on the composite drinking measure. When differences between conditions emerged on this measure, comparisons were then made on each of the three specific outcome measures (drinks per week, peak BAC, and alcohol related problems). All tests were conducted using a p value of .05.		
Risk of bias (ROB) **Overall ROB**	**Outcome name**		
	Outcome	**Judgement (Low / High / some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Low risk	No description of how sequence was generated. Allocation sequence most likely concealed due to method of allocation.
	Risk of bias due to deviations from intended interventions (assignment)	Low risk	Participants and counsellors were not blinded but no deviations from intended intervention. Intention to treat analyses.
	Risk of bias due to deviations from intended interventions (adherence)	Low risk	Participants and counsellors were not blinded. No deviations possible.
	Missing outcome data	Some concerns	Attrition at 10%+ for all but one arm. Missingness in the outcome could depend on its true value. Participants were not more likely to drop out of the study at either follow-up based on baseline characteristics or study condition.
	Risk of bias in measurement of the outcome	Some concerns	Participants were not blinded. Self-assessment could have been influenced by knowledge of allocation.
	Risk of bias in selection of the reported result	Some concerns	No registered protocol.
	Other sources of bias		
	Overall Risk of Bias	Some concerns	
	Other outcome details		
Source of funding			
Comments			
Additional references			

Bibliographic reference/s	**Walters ST; Vader AM; Harris TR; Field CA; Jouriles EN; Dismantling motivational interviewing and feedback for college drinkers: a randomized clinical trial. 2009 Feb;77(1):64-73.**	
Study name	Dismantling motivational interviewing and feedback for college drinkers: a randomized clinical trial.	
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences	
	Reward and threat	
	Repetition and substitution	
	Antecedents	
	Associations	
	Covert Learning	
	Natural Consequences	x
	Feedback and monitoring	X
	Goals and planning	
	Social support	
	Self-belief	
	Comparison of outcomes	x
	Identity	
	Shaping knowledge	X
	Regulation	
	Comparison of behaviour	x

Crombie 2018

Bibliographic reference/s	**Crombie IK; Irvine L; Williams B; Sniehotta FF; Petrie DJ; Jones C; Norrie J; Evans JMM; Emslie C; Rice PM; Slane PW; Humphris G; Ricketts IW; Melson AJ; Donnan PT; McKenzie A; Huang L; Achison M; Texting to Reduce Alcohol Misuse (TRAM): main findings from a randomized controlled trial of a text message intervention to reduce binge drinking among disadvantaged men. 2018 Sept 113(9): 1609-1618.**
Study name	Texting to Reduce Alcohol Misuse (TRAM): main findings from a randomized controlled trial of a text message intervention to reduce binge drinking among disadvantaged men
Registration	Current Controlled Trials ISRCTN07695192
Study type	RCT
Study dates	March 2014 – February 2016.
Objective	To evaluate a text message-based intervention to reduce alcohol consumption in heavy drinking men.
Country/ Setting	UK
Number of participants / clusters	825 (n=411 for intervention; n=414 for active control)
Attrition	Intervention = 45 (11%) lost at follow-up 1; 62 (15%) lost at follow-up 2. Control = 43 (10%) lost at follow-up 1; 56 (14%) lost at follow-up 2.
Participant /community characteristics.	Age, mean (SD): 19 (0.71) Gender, %female: 33% Ethnicity, %white: 85%

Bibliographic reference/s	**Crombie IK; Irvine L; Williams B; Sniehotta FF; Petrie DJ; Jones C; Norrie J; Evans JMM; Emslie C; Rice PM; Slane PW; Humphris G; Ricketts IW; Melson AJ; Donnan PT; McKenzie A; Huang L; Achison M; Texting to Reduce Alcohol Misuse (TRAM): main findings from a randomized controlled trial of a text message intervention to reduce binge drinking among disadvantaged men. 2018 Sept 113(9): 1609-1618.**	
Study name	Texting to Reduce Alcohol Misuse (TRAM): main findings from a randomized controlled trial of a text message intervention to reduce binge drinking among disadvantaged men	
	Baseline characteristics given for whole sample, not per group.	
Method of allocation	carried out using the secure remote web-based system provided by the Tayside Clinical Trials Unit. Randomisation was stratified by participating centre and the recruitment method and restricted using block sizes of randomly varying lengths. The allocation ratio was 1 : 1, intervention to control. The researchers appointed to carry out the recruitment enrolled the participants. The researchers entered key data items (mobile phone number, study identification number and preferred first name) into the web-based randomisation system. This system automatically assigned men to one of the treatment arms and subsequently delivered the appropriate set of text messages. The researchers who conducted the baseline and follow-up interviews had no access to this system and were unaware to which treatment group the men had been assigned.	
Inclusion criteria	All the following must apply: Men aged 25-44 years from areas of high deprivation (measured using the SIMD). ≥ 2 episodes of binge drinking (>8 units in a single session) in the preceding 28 days.	
Exclusion criteria	Men currently attending care at an alcohol problem service. Men not contactable by mobile phone for nay part of the intervention period.	
Intervention	**TIDieR Checklist criteria**	**Details**
	Brief Name	
	Rationale/theory/Goal	Text messages sent were in the form of a story of a character, each text message giving more of the story. It was based on the Health Action Process Approach that theorises behaviour changes occurs in 2 phases: pre-intentional/motivational phase, and a volitional phase (itself made up of a planning phase and a maintenance phase). This was done as these phases address the intention-behaviour gap. The aim was to reduce alcohol consumption and number of heavy drinking days.
	Materials used	Text messages.
	Procedures used	The intervention group received 112 text messages, each with at least one of the following purposes: • delivering the narrative (to engage participants) • increasing the salience of the harms of heavy drinking and the benefits of moderated drinking • modelling steps in the behaviour change process

Bibliographic reference/s	**Crombie IK; Irvine L; Williams B; Sniehotta FF; Petrie DJ; Jones C; Norrie J; Evans JMM; Emslie C; Rice PM; Slane PW; Humphris G; Ricketts IW; Melson AJ; Donnan PT; McKenzie A; Huang L; Achison M; Texting to Reduce Alcohol Misuse (TRAM): main findings from a randomized controlled trial of a text message intervention to reduce binge drinking among disadvantaged men. 2018 Sept 113(9): 1609-1618.**	
Study name	Texting to Reduce Alcohol Misuse (TRAM): main findings from a randomized controlled trial of a text message intervention to reduce binge drinking among disadvantaged men	
		• giving information or facts (to augment the behaviour change strategy portrayed in the narrative) • asking questions (to monitor, in real time, participants' reactions to the components of the intervention) • comments from other characters (anonymised quotations from the feasibility study participants to reinforce the part of the intervention being delivered) • adding humour (to increase engagement). The text messages were constructed so that the main character, Dave, appeared to be a recipient of the intervention. Thus, he commented on the text messages, answered questions and modelled behaviours that were expected from the behaviour change strategy. The control group received 89 text messages in the same period, which did not mention alcohol or include any messages on changing health behaviour. Each week concentrated on a different health topic and provided facts, trivia and jokes on the topics. Although the control messages did not include a narrative, the characters did play a minor role. To promote engagement, men were asked one question per week.
	Provider	-
	Digital platform	Internet.
	Location	UK
	Duration	3-month intervention period.
	Intensity	Participants received at least one (maximum 4) message every day for the first 5 weeks. From week 6, occasional days were missed.
	Tailoring/adaptation	The intervention arm tailored harm-related text messages by asking participants if they or their friends had experienced harms to avoid the possibility of patronising experienced drinkers.
	Planned treatment fidelity	-
	Actual treatment fidelity	-

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Crombie IK; Irvine L; Williams B; Sniehotta FF; Petrie DJ; Jones C; Norrie J; Evans JMM; Emslie C; Rice PM; Slane PW; Humphris G; Ricketts IW; Melson AJ; Donnan PT; McKenzie A; Huang L; Achison M; Texting to Reduce Alcohol Misuse (TRAM): main findings from a randomized controlled trial of a text message intervention to reduce binge drinking among disadvantaged men. 2018 Sept 113(9): 1609-1618.</td></tr>
<tr><td>Study name</td><td colspan="2">Texting to Reduce Alcohol Misuse (TRAM): main findings from a randomized controlled trial of a text message intervention to reduce binge drinking among disadvantaged men</td></tr>
<tr><td></td><td>Other details</td><td>-</td></tr>
<tr><td>Follow up</td><td colspan="2">12-month follow up</td></tr>
<tr><td>Data collection</td><td colspan="2">In this study, binge drinking is defined as > 8 UK units of alcohol in a single session. It corresponds to > 64 g of ethanol. The study recorded the number of binge-drinking episodes over the 28 days before the interview. This study also uses > 16 units of alcohol as the threshold for heavy binge drinking to identify those who are consuming very large amounts of alcohol in a single session.
All baseline and outcome data were collected by telephone interview by research assistants blinded to the treatment arm. The approach was adapted to obtain detailed information on the alcohol consumed on every drinking occasion over the previous 28 days. When a drink had been poured at home, particularly spirits and wine, participants were asked how their measure compared with a standard pub measure. If consumption was stated as a range of drinks (e.g. ‘2–3 single vodkas’), the mid-point of the range was taken (i.e. 2.5 single vodkas).
Alcohol consumption was measured by the methods described above. To minimise research participation effects, which could influence the impact of the intervention, the number of data collected at baseline was kept to a minimum. Thus, questions on topics such as knowledge of the harms of alcohol, or intentions to reduce consumption, were not asked.
Individual-level sociodemographic status was assessed using marital status, employment status and educational attainment. The participants’ postcodes were used to derive the SIMD score. In addition, a single question from the Fast Alcohol Screening Test (FAST)136 was used to determine whether or not participants suffered episodes of memory loss following drinking sessions.
The final follow-up was carried out 12 months post intervention (see Appendix 7). The primary outcome and three secondary outcomes were measured at this follow-up.</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td colspan="2">Drinking outcomes at 12 months.
<table>
<tr><td></td><td>Intervention (n=349)</td><td>Control (n=358)</td></tr>
<tr><td>Primary outcome</td><td></td><td></td></tr>
<tr><td rowspan="2">Consumption in previous 28 days, mean units (SD)</td><td>Baseline:
125.1 (120.4)</td><td>Baseline:
132.4 (135.4)</td></tr>
<tr><td>12 months:
77.2 (119.8)</td><td>12 months:
79.4 (120.0)</td></tr>
<tr><td rowspan="2">Proportion of total units consumed during binge-drinking sessions (> 8 units of alcohol) past 28 days (%)</td><td>Baseline:
92.4</td><td>Baseline:
92.3</td></tr>
<tr><td>12 months:
60.2</td><td>12 months:
63.3</td></tr>
<tr><td rowspan="2">No. alcohol free days past 28 days, mean (SD)</td><td>Baseline:
20.2 (5.6)</td><td>Baseline:
19.8 (5.9)</td></tr>
<tr><td>12 months:
21.8 (6.2)</td><td>12 months:
21.5 (7.0)</td></tr>
</table></td></tr>
</table>

<table>
<tr><td>Bibliographic reference/s</td><td>Crombie IK; Irvine L; Williams B; Sniehotta FF; Petrie DJ; Jones C; Norrie J; Evans JMM; Emslie C; Rice PM; Slane PW; Humphris G; Ricketts IW; Melson AJ; Donnan PT; McKenzie A; Huang L; Achison M; Texting to Reduce Alcohol Misuse (TRAM): main findings from a randomized controlled trial of a text message intervention to reduce binge drinking among disadvantaged men. 2018 Sept 113(9): 1609-1618.</td></tr>
<tr><td>Study name</td><td>Texting to Reduce Alcohol Misuse (TRAM): main findings from a randomized controlled trial of a text message intervention to reduce binge drinking among disadvantaged men</td></tr>
<tr><td></td><td>
<table>
<tr><td rowspan="2">No. of binge-drinking sessions (> 8 units of alcohol) past 28 days, mean (SD)</td><td>Baseline:
6.25 (4.9)</td><td>Baseline:
6.66 (5.4)</td></tr>
<tr><td>12-months
3.62 (5.1)</td><td>12-months:
4.07 (5.7)</td></tr>
<tr><td rowspan="2">No. of heavy binge-drinking sessions
(> 16 units of alcohol) past 28 days, mean (SD)</td><td>Baseline:
3.40 (4.7)</td><td>Baseline:
3.51 (4.7)</td></tr>
<tr><td>12-months:
1.84 (4.4)</td><td>12-months:
1.70 (4.0)</td></tr>
</table>
<table>
<tr><td></td><td>Intervention</td><td>Control</td></tr>
<tr><td>Response rate, % (n)</td><td>92 (380)</td><td>94 (388)</td></tr>
</table>
Responses were received from 92% of participants in the intervention group (380 men) and from 94% of participants in the control group (388 men).
</td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td>None reported.</td></tr>
<tr><td>Statistical Analysis</td><td>To detect a reduction in the frequency of binge drinking in this way from 57% to 46% (at the 5% significance level with a power of 80%) would require a sample size of 319 per group, or 638 in total. The required sample size was then increased by 20% to allow for losses to follow-up, making the total sample size 798.
Intention-to-treat analyses were conducted.
Binary variables (including primary and secondary outcomes as well as baseline binary variables) were summarised as number of observations, number of missing values, and number and percentage overall and per treatment group. Continuous variables (total alcohol consumption at 12 months post intervention and total alcohol consumption at baseline) were summarised as number of observations, number of missing values, mean, standard deviation (SD), standard error of the mean, median, and range overall and per treatment group.
Logistic regression was used to determine the effect of the intervention of the outcomes i.e. if the participant had consumed >8 units on 3 or more occasions in the previous 28 days. 3 models were fitted: unadjusted model; model adjusted for 1 baseline drinking variable; a full model adjusted for baseline drinking as for model 1 and the baseline covariates of method of recruitment.
For total alcohol consumption at 12 months post intervention, owing to the skewness of the data, a generalised linear model assuming a gamma distribution and log-link function was used in the analysis. The 3 models are described above were fitted.</td></tr>
</table>

Bibliographic reference/s	**Crombie IK; Irvine L; Williams B; Sniehotta FF; Petrie DJ; Jones C; Norrie J; Evans JMM; Emslie C; Rice PM; Slane PW; Humphris G; Ricketts IW; Melson AJ; Donnan PT; McKenzie A; Huang L; Achison M; Texting to Reduce Alcohol Misuse (TRAM): main findings from a randomized controlled trial of a text message intervention to reduce binge drinking among disadvantaged men. 2018 Sept 113(9): 1609-1618.**		
Study name	Texting to Reduce Alcohol Misuse (TRAM): main findings from a randomized controlled trial of a text message intervention to reduce binge drinking among disadvantaged men		
	Multiple imputation methods were used to assess the sensitivity of outcome results to missing data, using generalised linear models. Multiple imputation included the explanatory variables used in the fully adjusted model above plus the primary and secondary outcomes. All primary and secondary outcome variables at baseline and at the 3-month and 12-month follow-ups were used, as was additional information collected at the 12-month follow-up interviews.		
Risk of bias (ROB) **Overall ROB**	**Outcome name**		
	Outcome	**Judgement (Low / High / some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Low risk	Randomisation done via computer.
	Risk of bias due to deviations from intended interventions (assignment)	Low risk	Participants were not aware of the intervention assignment. Telephone interviewers blind to assignment. Intention-to-treat analyses were carried out.
	Risk of bias due to deviations from intended interventions (adherence)	Low risk	Participants were not aware of the intervention assignment. Telephone interviewers blind to assignment. Intervention implemented successfully for most participants. No possibility of groups crossing over.
	Missing outcome data	Low risk	Attrition over 10% for both arms at 12 months. Multiple imputations were carried out with generalised linear models for both arms.
	Risk of bias in measurement of the outcome	Low risk	Telephone interviews were structured conducted by researchers blinded to intervention arm.
	Risk of bias in selection of the reported result	Low risk	Trial registered prospectively.
	Other sources of bias		
	Overall Risk of Bias	Low risk	
	Other outcome details		
Source of funding			
Comments			
Additional references			
Behaviour change	Scheduled consequences		

Bibliographic reference/s	**Crombie IK; Irvine L; Williams B; Sniehotta FF; Petrie DJ; Jones C; Norrie J; Evans JMM; Emslie C; Rice PM; Slane PW; Humphris G; Ricketts IW; Melson AJ; Donnan PT; McKenzie A; Huang L; Achison M; Texting to Reduce Alcohol Misuse (TRAM): main findings from a randomized controlled trial of a text message intervention to reduce binge drinking among disadvantaged men. 2018 Sept 113(9): 1609-1618.**	
Study name	Texting to Reduce Alcohol Misuse (TRAM): main findings from a randomized controlled trial of a text message intervention to reduce binge drinking among disadvantaged men	
techniques (16 theoretical clusters)	Reward and threat	
	Repetition and substitution	
	Antecedents	
	Associations	
	Covert Learning	
	Natural Consequences	
	Feedback and monitoring	
	Goals and planning	x
	Social support	x
	Self-belief	x
	Comparison of outcomes	x
	Identity	
	Shaping knowledge	x
	Regulation	
	Comparison of behaviour	

Haug 2017

Bibliographic reference/s	**Haug S; Paz Castro R; Kowatsch T; Filler A; Schaub MP; Efficacy of a technology-based, integrated smoking cessation and alcohol intervention for smoking cessation in adolescents: Results of a cluster-randomised controlled trial. Journal of Substance Abuse Treatment 2017 Nov; 82:55-66.**
Study name	Efficacy of a technology-based, integrated smoking cessation and alcohol intervention for smoking cessation in adolescents: Results of a cluster-randomised controlled trial
Registration	ISRCTN02427446
Study type	cRCT
Study dates	September 2014 – January 2017
Objective	To assess the efficacy of an integrated intervention that targets smoking and alcohol consumption vs targeting smoking only on smoking frequency and alcohol consumption.
Country/ Setting	Switzerland
Number of participants / clusters	N=1471 in 341 school classes n=730 in 174 school classes; smoking and alcohol intervention group (MCT+) n=741 in 167 classes; smoking intervention only group (MCT)
Attrition	185 (25%) dropped out of MCT group at 6 months 170 (23%) dropped out of MCT+ group at 6 months

<table>
<tr><td>Bibliographic reference/s</td><td colspan="2">Haug S; Paz Castro R; Kowatsch T; Filler A; Schaub MP; Efficacy of a technology-based, integrated smoking cessation and alcohol intervention for smoking cessation in adolescents: Results of a cluster-randomised controlled trial. Journal of Substance Abuse Treatment 2017 Nov; 82:55-66.</td></tr>
<tr><td>Study name</td><td colspan="2">Efficacy of a technology-based, integrated smoking cessation and alcohol intervention for smoking cessation in adolescents: Results of a cluster-randomised controlled trial</td></tr>
<tr><td>Participant /community characteristics.</td><td colspan="2"><table>
<tr><th></th><th>MCT+ (n=730)</th><th>MCT (n=741)</th></tr>
<tr><td>Gender, %female</td><td>59.0</td><td>60.7</td></tr>
<tr><td>Age, mean (SD)</td><td>18.4 (2.5)</td><td>18.9 (3.6)</td></tr>
<tr><td>Binge drinkers, n (%)</td><td>495 (67.8)</td><td>492 (66.4)</td></tr>
</table></td></tr>
<tr><td>Method of allocation</td><td colspan="2">School classes were set as the randomisation unit. To ensure approximately equal sample sizes in the study groups, a block randomisation procedure was performed using computer-generated, randomly permuted blocks of four schoolclasses.
Research assistants supervising the baseline assessment in the vocational schools were blinded to the group allocation of school classes. In addition, group allocation was not revealed to participants until they had provided their informed consent, username, mobile phone number, and baseline data. Research assistants who performed the computer assisted follow up assessments for primary and secondary outcomes also were blinded to subject group allocation.</td></tr>
<tr><td>Inclusion criteria</td><td colspan="2">Daily or occasional cigarette smoking (>4 cigarettes over the preceding months and at least one cigarette within the preceding week)
Ownership of a mobile phone</td></tr>
<tr><td>Exclusion criteria</td><td colspan="2">None reported</td></tr>
<tr><td>Intervention</td><td>TIDieR Checklist criteria</td><td>Details</td></tr>
<tr><td></td><td>Brief Name</td><td>MobileCoach</td></tr>
<tr><td></td><td>Rationale/theory/Goal</td><td>Smoking and drinking often go together. Therefore, reducing smoking frequency will be more successful if both alcohol and smoking consumption are targeted at once. Two interventions were compared: intervention targeting smoking and alcohol and intervention targeting smoking only.</td></tr>
<tr><td></td><td>Materials used</td><td>Text messages and website.
A baseline survey, individually tailored text messages for smoking cessation (both arms), individually tailored web-based feedback on their drinking and a weekly text message that encouraged restricting binge drinking if binge drinking was reported via questionnaire (MCT+ only). Text messages were short (150-200 characters), some of which included links to relevant video clips, pictures and websites.</td></tr>
<tr><td></td><td>Procedures used</td><td>MCT+ Feedback on drinking behaviours
The web-based feedback included individually-tailored graphic and textual information on (1) the number of drinks consumed weekly, relative to age and gender- specific reference groups; (2) money spent on drinking; (3) the calorie count of consumed alcoholic drinks; and (4) the frequency of binge drinking relative to age- and</td></tr>
</table>

Bibliographic reference/s	**Haug S; Paz Castro R; Kowatsch T; Filler A; Schaub MP; Efficacy of a technology-based, integrated smoking cessation and alcohol intervention for smoking cessation in adolescents: Results of a cluster-randomised controlled trial. Journal of Substance Abuse Treatment 2017 Nov; 82:55-66.**	
Study name	Efficacy of a technology-based, integrated smoking cessation and alcohol intervention for smoking cessation in adolescents: Results of a cluster-randomised controlled trial	
		gender-specific reference groups. Age- and gender-specific reference values were obtained from 973 vocational and upper secondary school students in the Canton of Zurich, Switzerland. *MCT+ Text messages stimulating low-risk drinking* Participants who reported binge drinking at baseline received one weekly text message encouraging restricting alcohol intake. The timing of this text message alternated biweekly: one week on Saturday at 7 pm, and the next week at the individual's most typical day and time for heavy drinking (e.g., Friday at 10 pm). The text messages provided information on (1) strategies for drinking within low-risk limits; and (2) the association between smoking and alcohol consumption. *Text messages to support smoking cessation (MCT+ and MCT)* Text message prompts were sent every week that assessed target behaviours or encouraged participants to take part in a quiz or message contest. Prompts were answered with a single letter, number or sentence. The content of the prompt depended on the participants stage of change, as classified by the Health Action Process Approach (HAPA). Every 4 weeks HAPA was assessed and number of cigarettes smoked was asked of those not yet ready to change. Immediate feedback was given to participants that was encouraging in nature. 48h after the weekly prompts, participants received advice and support tailored to their HAPA class. 3 quizzes were conducted during the intervention period that had questions on smoking norms, health consequences and personal expenditures on cigarettes. Correct responses were given immediately to those who participated and 48h after to those who did not. Twice a contest was conducted that required participants to either send in a motivational text message to help other participants quit smoking or suggest concrete ways to help others quit

Bibliographic reference/s	**Haug S; Paz Castro R; Kowatsch T; Filler A; Schaub MP; Efficacy of a technology-based, integrated smoking cessation and alcohol intervention for smoking cessation in adolescents: Results of a cluster-randomised controlled trial. Journal of Substance Abuse Treatment 2017 Nov; 82:55-66.**	
Study name	Efficacy of a technology-based, integrated smoking cessation and alcohol intervention for smoking cessation in adolescents: Results of a cluster-randomised controlled trial	
		smoking. After 48h, the best text message was distributed. Optional additional text messages focused on quit-day preparation and relapse prevention. After participants inputted their intended quit date, the program provided two daily text messages in weeks −1 through +1, followed by one daily text message in weeks +2 and +3.
	Provider	-
	Digital platform	Text messages and websites.
	Location	Switzerland.
	Duration	3 months
	Intensity	Once to twice weekly.
	Tailoring/adaptation	Yes, responses, advice and support are based on how ready participants are to quit and personalised normative feedback is given on alcohol consumption.
	Planned treatment fidelity	-
	Actual treatment fidelity	-
	Other details	-
Follow up	6-month follow up	
Data collection	Quantity of alcohol consumed was assessed via a 7-day drinking calendar similar to the Daily Drinking Questionnaire, for which participants were asked to think about a typical week in the preceding month and record the number of standard drinks they typically consumed each day during that week. Examples of standard drinks containing 12–14 g of ethanol were provided for beer, wine, spirits, alcopops, and cocktails, along with conversion values (e.g., three 0.5 L cans of beer = 6 standard drinks). Maximal alcohol consumption was assessed by asking participants to report the number of standard drinks consumed on their heaviest drinking occasion over the preceding 30 days. Tobacco smoking status was assessed by asking the question — “Are you currently smoking cigarettes?” — with the following response options: (1) Yes, I smoke cigarettes daily; (2) Yes, I smoke cigarettes occasionally, but not daily; and (3) No. In occasional smokers, we also assessed the number of days they smoked in a typical month, as well as the total number of cigarettes they had smoked over the past seven days. In daily smokers and occasional smokers who smoked at least four cigarettes over the preceding month and at least one cigarette over the preceding week, we assessed the following additional smoking-related variables: mean number of cigarettes smoked per day; HAPA stage of change; and the number of previous attempts to quit. HAPA stage of change was assessed by asking “Have you recently smoked cigarettes?” — with the following available response options: (1) “Yes, and I do not intend to quit” (Pre-contemplation), (2) “Yes, but I am considering quitting” (Contemplation), or (3) “Yes, but I seriously intend to quit” (Preparation). The number of responses to the weekly text message prompts and the number of program participants who unsubscribed from the program (program attrition) were examined. At follow-up, we assessed text message usage by asking	

<table>
<tr><td>Bibliographic reference/s</td><td>Haug S; Paz Castro R; Kowatsch T; Filler A; Schaub MP; Efficacy of a technology-based, integrated smoking cessation and alcohol intervention for smoking cessation in adolescents: Results of a cluster-randomised controlled trial. Journal of Substance Abuse Treatment 2017 Nov; 82:55-66.</td></tr>
<tr><td>Study name</td><td>Efficacy of a technology-based, integrated smoking cessation and alcohol intervention for smoking cessation in adolescents: Results of a cluster-randomised controlled trial</td></tr>
<tr><td></td><td>participants whether they (1) read through their messages thoroughly; (2) took only a short look at their messages; or (3) did not read their messages.</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td>Drinking outcomes at 6 months.
<table>
<tr><td></td><td>MCT+ (n=741)</td><td>MCT (n=730)</td><td>P values</td></tr>
<tr><td rowspan="3">Alcoholic drinks per week, mean (SD)</td><td>Baseline:
10.0 (11.1)</td><td>Baseline:
9.8 (12.9)</td><td rowspan="2"></td></tr>
<tr><td>6 months:
5.2 (7.9)</td><td>6 months:
5.6 (8.9)</td></tr>
<tr><td>Mean difference:
-4.8 (9.90)</td><td>Mean difference:
-4.2 (11.44)</td><td>0.28</td></tr>
</table>
Engagement
<table>
<tr><td></td><td>MCT+ (n=741)</td><td>MCT (n=730)</td></tr>
<tr><td>Remained logged in (%)</td><td>97.5</td><td>98.2</td></tr>
<tr><td>Read text messages thoroughly (self-reported %)</td><td>89.6</td><td>89.3</td></tr>
</table></td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td></td></tr>
<tr><td>Statistical Analysis</td><td>Baseline differences between participants in the study groups were identified by Pearson chi-square analysis for categorical variables, and either by Student's t-tests or Mann-Whitney U tests for continuous variables that were normally and non-normally distributed, respectively. The same tests were applied to examine whether or not participants lost to follow-up differed from those who responded, as a function of study group.
Analysis of continuous outcomes focused on differences between baseline and follow-up values.
Data was analysed as intention to treat and multiple imputation was used to account for missing data. Missingness at random was assumed since missingness in study variables was associated with measured covariates. Overall predictors of missingness were age and the number of text messages answered by the participant; thus, they were incorporated in all the imputation models for the study outcomes. A specific predictor of missing data at follow-up by study group was smoking status, which was also included in the imputation models. Also, school class was included in the imputation model to account for the clustered structure of data.
All analyses were conducted with and without controlling for the following baseline differences: age, migration and physical activity. Within the results section, the unadjusted values were reported, unless the adjusted results differed in either direction, magnitude or significance. Performed on SPSS 23 and R 3.2.1 via lme4 and mice packages.</td></tr>
<tr><td></td><td>Outcome name</td></tr>
</table>

Bibliographic reference/s	**Haug S; Paz Castro R; Kowatsch T; Filler A; Schaub MP; Efficacy of a technology-based, integrated smoking cessation and alcohol intervention for smoking cessation in adolescents: Results of a cluster-randomised controlled trial. Journal of Substance Abuse Treatment 2017 Nov; 82:55-66.**		
Study name	Efficacy of a technology-based, integrated smoking cessation and alcohol intervention for smoking cessation in adolescents: Results of a cluster-randomised controlled trial		
Risk of bias (ROB) **Overall ROB**	**Outcome**	**Judgement (Low / High / some concerns)**	**Comments**
	Risk of bias arising from the randomisation process	Low risk	Computer-generated sequence and allocation concealed. No differences between baseline characteristics of groups.
	Risk of bias due to deviations from intended interventions (assignment)	Low risk	Questionnaires and interventions completed by participants by computer and text. Intention to treat analyses conducted.
	Risk of bias due to deviations from intended interventions (adherence)	Some concerns.	Questionnaires and interventions completed by participants by computer. High attrition rate after assignment. Appropriate analysis conducted to address.
	Missing outcome data	Low risk	High rate of attrition. Imputation done by multiple imputation (predictive mean matching).
	Risk of bias in measurement of the outcome	Low risk	Done via computer on same tool.
	Risk of bias in selection of the reported result	Low risk	Study adheres prospectively registered protocol.
	Other sources of bias		
	Overall Risk of Bias	Some concerns	
	Other outcome details		
Source of funding	Swiss Tobacco Prevention Fund (No. 13.006402)		
Comments			
Additional references			
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution	x	
	Antecedents	x	
	Associations		
	Covert Learning		
	Natural Consequences	x	

Bibliographic reference/s	**Haug S; Paz Castro R; Kowatsch T; Filler A; Schaub MP; Efficacy of a technology-based, integrated smoking cessation and alcohol intervention for smoking cessation in adolescents: Results of a cluster-randomised controlled trial. Journal of Substance Abuse Treatment 2017 Nov; 82:55-66.**
Study name	Efficacy of a technology-based, integrated smoking cessation and alcohol intervention for smoking cessation in adolescents: Results of a cluster-randomised controlled trial
	Feedback and monitoring: x Goals and planning: x Social support: Self-belief: x Comparison of outcomes: x Identity: Shaping knowledge: x Regulation: Comparison of behaviour:

Suffoletto 2015

Bibliographic reference/s	**Suffoletto B, Kristan J, Chung T, Jeong K, Fabio A, Monti P, Clark DB. An interactive text message intervention to reduce binge drinking in young adults: a randomized controlled trial with 9-month outcomes. PloS one. 2015 Nov 18;10(11):e0142877.**
Study name	An interactive text message intervention to reduce binge drinking in young adults
Registration	ClinicalTrials.gov NCT01688245
Study type	RCT
Study dates	Recruitment November 2012 to November 2013
Objective	To examine the durability of SMS intervention effects up to 6-months post-intervention completion.
Country/ Setting	US
Number of participants / clusters	N=765 SA+F, n=384 SA, n=196 Control, n=185 Power calculation estimated a sample size of 750 needed to detect a difference with 90% power at 1% significance level (allowing for 30% attrition [target at follow-up n=525])
Attrition	

	SA+F	SA	Control	Total
Allocated	384	196	185	765
Completed 6-months follow-up	234	126	126	486 (63.5%)
Completed 9-months follow-up	199	109	112	420 (54.9%)

<table>
<tr><td>Bibliographic reference/s</td><td>Suffoletto B, Kristan J, Chung T, Jeong K, Fabio A, Monti P, Clark DB. An interactive text message intervention to reduce binge drinking in young adults: a randomized controlled trial with 9-month outcomes. PloS one. 2015 Nov 18;10(11):e0142877.</td></tr>
<tr><td>Study name</td><td>An interactive text message intervention to reduce binge drinking in young adults</td></tr>
<tr><td></td><td>No statistically significant differences in attrition between study groups. Compared to participants who completed 9-month follow-up, those lost to follow up were more likely to self-identify as being of black race (38.1% vs 55.1%; p<0.0001), less likely to be currently enrolled in college (51.7% vs 33.9%; p<0.0001) and with high baseline AUDIT-C scores (mean 6.03 vs 6.57; p=0.0005).</td></tr>
<tr><td>Participant /community characteristics.</td><td>
<table>
<tr><td></td><td>SA+F, n=384</td><td>SA, n=196</td><td>Control, n=185</td></tr>
<tr><td>Age, mean (SD)</td><td>22.0 (2.0)</td><td>22.0 (2.0)</td><td>21.8 (2.1)</td></tr>
<tr><td>Female</td><td>251 (65.4)</td><td>125 (63.8)</td><td>124 (67.0)</td></tr>
<tr><td>Race, n (%)
Black
White
Other</td><td>
158 (41.2)
190 (49.5)
36 (9.4)</td><td>
88 (44.9)
98 (50.0)
10 (5.1)</td><td>
83 (44.9)
88 (47.6)
14 (7.6)</td></tr>
<tr><td>Hispanic, n (%)</td><td>22 (5.7)</td><td>10 (5.1)</td><td>15 (8.1)</td></tr>
<tr><td>Current college enrolment, n (%)</td><td>162 (42.2)</td><td>85 (43.4)</td><td>87 (47.0)</td></tr>
<tr><td>Employment, n (%)
Not working
Part-time
Full-time</td><td>
120 (31.2)
110 (28.7)
154 (40.1)</td><td>
62 (31.6)
59 (30.1)
75 (38.3)</td><td>
61 (33.0)
62 (33.5)
62 (33.5)</td></tr>
<tr><td>Other substance use in last 3 months, n (%)
Daily or almost daily tobacco
Any cannabis</td><td>
145 (37.8)
197 (51.3)</td><td>
72 (36.7)
94 (50.0)</td><td>
64 (34.6)
95 (51.4)</td></tr>
<tr><td>AUDIT-C score, mean (SD)</td><td>6.3 (2.2)</td><td>6.2 (2.1)</td><td>6.3 (2.2)</td></tr>
<tr><td>ED visit due to alcohol, n (%)</td><td>12 (3.1)</td><td>3 (1.5)</td><td>4 (2.2)</td></tr>
</table>

No differences in baseline characteristics.</td></tr>
<tr><td>Method of allocation</td><td>Randomly assigned to 1 of 3 groups, in 2:1:1 ratio. Randomisation was generated in blocks of 8 for each recruitment site by a computer-generated algorithm and allocated electronically. Participants were not told which group they were assigned to.</td></tr>
<tr><td>Inclusion criteria</td><td>Aged 18 to 25
Medically stable
Spoke English
Not seeking treatment for alcohol or drugs
Reported past hazardous drinking based on AUDIT-C score >3 for women and >4 for men</td></tr>
<tr><td>Exclusion criteria</td><td>Not owning a personal mobile phone with text messaging
Past treatment for drug or alcohol disorder</td></tr>
</table>

Bibliographic reference/s	**Suffoletto B, Kristan J, Chung T, Jeong K, Fabio A, Monti P, Clark DB. An interactive text message intervention to reduce binge drinking in young adults: a randomized controlled trial with 9-month outcomes. PloS one. 2015 Nov 18;10(11):e0142877.**	
Study name	An interactive text message intervention to reduce binge drinking in young adults	
	Current treatment for psychiatric disorder Current enrolment in high school	
Intervention (arm 1)	**TIDieR Checklist criteria**	**Details**
	Brief Name	SMS+F
	Rationale/theory/Goal	Theory of planned behaviour
	Materials used	Text messages
	Procedures used	All people with a positive AUDIT-C screen for harmful drinking received brief, standard alcohol risk-reduction advice. Brief 2-way text message dialogue sessions performed each Thursday and Sunday for 12 weeks. Aimed to increase awareness of weekend drinking intentions and behaviour and increase goal-striving and goal-attainment towards reduced alcohol consumption. Thursday text messages asked if the individual had a weekend drinking plan, and if positive, another message queried whether the person was willing to set a goal to limit drinking below the threshold of 4/5 drinks (females/males) per drinking occasion. Based on response, tailored feedback was provided, aimed at increasing motivation toward reduced alcohol consumption. Sunday texts were used to record the highest number of drinks consumed on any occasion that weekend. Tailored feedback was given, to either support low weekend alcohol consumption or aimed to encourage reflection on their alcohol consumption.
	Provider	-
	Digital platform	Text message
	Location	Via text message, USA
	Duration	12 weeks
	Intensity	2 occasions/week
	Tailoring/adaptation	Text messages tailored as described above, according to answers regarding drinking behaviour.
	Planned treatment fidelity	-
	Actual treatment fidelity	Week 1: 90.9% response rate to Sunday SMS; week 12: 66.4% response rate to Sunday SMS. Approx. 33% completed all text queries.
	Other details	-
Comparison (arm 1)	**TIDieR Checklist criteria**	**Details**
	Brief Name	SMS+A – assessment control

Bibliographic reference/s	**Suffoletto B, Kristan J, Chung T, Jeong K, Fabio A, Monti P, Clark DB. An interactive text message intervention to reduce binge drinking in young adults: a randomized controlled trial with 9-month outcomes. PloS one. 2015 Nov 18;10(11):e0142877.**	
Study name	An interactive text message intervention to reduce binge drinking in young adults	
	Rationale/theory/Goal	-
	Materials used	Text messages
	Procedures used	All people with a positive AUDIT-C screen for harmful drinking received brief, standard alcohol risk-reduction advice. SMS drinking queries received each Sunday for 12 weeks identical to SMS+F intervention arm, but no alcohol related feedback was given (assessment of drinking behaviour only)
	Provider	-
	Digital platform	Text message
	Location	Text message, USA
	Duration	12 weeks
	Intensity	1 occasion/week
	Tailoring/adaptation	None
	Modifications	None
	Planned treatment fidelity	-
	Actual treatment fidelity	Week 1: 93.3% response rate to Sunday SMS; week 12: 72.8% response rate to Sunday SMS. Approx. 33% completed all text queries.
	Other details	-
Comparison (arm 2)	**TIDieR Checklist criteria**	**Details**
	Brief Name	Control – no SMS
	Rationale/theory/Goal	-
	Materials used	None
	Procedures used	All people with a positive AUDIT-C screen for harmful drinking received brief, standard alcohol risk-reduction advice.
	Provider	-
	Digital platform	-
	Location	-
	Duration	-
	Intensity	-
	Tailoring/adaptation	-
	Modifications	-
	Planned treatment fidelity	-
	Actual treatment fidelity	-
	Other details	
Follow up	3, 6 and 9-month follow-up outcome assessments.	
Data collection	Substance use over past 3 months was assessed using NIDA Modified Alcohol, Smoking and Substance Involvement Screening Test. Alcohol use was assessed using the Timeline Follow Back method. Memory aids were used such as a	

<table>
<tr><td>Bibliographic reference/s</td><td>Suffoletto B, Kristan J, Chung T, Jeong K, Fabio A, Monti P, Clark DB. An interactive text message intervention to reduce binge drinking in young adults: a randomized controlled trial with 9-month outcomes. PloS one. 2015 Nov 18;10(11):e0142877.</td></tr>
<tr><td>Study name</td><td>An interactive text message intervention to reduce binge drinking in young adults</td></tr>
<tr><td></td><td>visual calendar with key dates and visual aids showed standard drink sizes to reduce variability. Alcohol related injuries were assessed using the revised Injury Behaviour Checklist.</td></tr>
<tr><td>Critical outcomes measures and effect size. (time points)</td><td>Days drinking ≥4/5 (female/male) drinks:
<table>
<tr><td></td><td>Baseline</td><td>6-months</td><td>9-months</td></tr>
<tr><td>Control, mean (SD)*</td><td>3.3 (3.8)</td><td>3.7 (3.9)</td><td>3.8 (4.5)</td></tr>
<tr><td>SMS+F, mean (SD)*</td><td>4.1 (4.6)</td><td>2.9 (3.8)</td><td>2.9 (3.6)</td></tr>
<tr><td>SMS+A, mean (SD)</td><td>3.8 (4.9)</td><td>4.3 (4.7)</td><td>4.0 (5.4)</td></tr>
</table>
*: compared in intervention vs other intervention analyses
Incidence of drinking ≥4/5 (female/male) drinks in 1 occasion, at least once in last 30 days:
<table>
<tr><td></td><td>Baseline</td><td>6-months</td><td>9-months</td></tr>
<tr><td>Control, n (%)</td><td>144 (77.8)</td><td>98 (77.8)</td><td>85 (75.9)</td></tr>
<tr><td>SMS+F, n (%)</td><td>305 (79.4)</td><td>150 (64.1)</td><td>135 (67.8)</td></tr>
<tr><td>SMS+A, n (%)</td><td>152 (77.6)</td><td>103 (81.8)</td><td>88 (80.7)</td></tr>
</table></td></tr>
<tr><td>Important outcomes measures and effect size. (time points)</td><td>Drinks per day drinking:
<table>
<tr><td></td><td>Baseline</td><td>6-months</td><td>9-months</td></tr>
<tr><td>Control, mean (SD)*</td><td>3.8 (2.0)</td><td>3.9 (2.2)</td><td>4.0 (2.3)</td></tr>
<tr><td>SMS+F, mean (SD)*</td><td>3.9 (2.1)</td><td>3.5 (2.3)</td><td>3.6 (2.1)</td></tr>
<tr><td>SMS+A, mean (SD)</td><td>4.0 (6.0)</td><td>4.2 (2.3)</td><td>4.1 (2.3)</td></tr>
</table>
*: compared in intervention vs other intervention analyses
Alcohol-related injury prevalence:
<table>
<tr><td></td><td>Baseline</td><td>6-months</td><td>9-months</td></tr>
<tr><td>Control, n (%)</td><td>63 (34.1)</td><td>20 (15.9)</td><td>18 (16.1)</td></tr>
</table></td></tr>
</table>

Bibliographic reference/s	**Suffoletto B, Kristan J, Chung T, Jeong K, Fabio A, Monti P, Clark DB. An interactive text message intervention to reduce binge drinking in young adults: a randomized controlled trial with 9-month outcomes. PloS one. 2015 Nov 18;10(11):e0142877.**
Study name	An interactive text message intervention to reduce binge drinking in young adults
	SMS+F, n (%) 131 (34.1) 40 (17.1) 16 (8.0) SMS+A, n (%) 75 (38.3) 26 (20.6) 14 (12.8)
Statistical Analysis	Intention to treat analysis included all participants who completed baseline assessment. Multiple imputation used to estimate missing data. Imputation models were as follows: for number of binge drinking days -Poisson distribution model; for any binge drinking day – logit distribution model; drinks per drinking day – regression distribution model; alcohol related injuries – logit distribution model. Predictors in the models included sex, baseline drinking severity, race, college enrolment and past 30 day drinking from prior time points. Final inference was combine from 50 sets of imputed data. Population average models used to estimate the average impact over time.
Risk of bias (ROB) **Overall ROB**	**Outcome name**

Outcome	Judgement (Low / High / some concerns)	Comments
Risk of bias arising from the randomisation process	Low	Allocation randomly generated by computer and allocated electronically. No differences in baseline characteristics between groups.
Risk of bias due to deviations from intended interventions (assignment)	Low	Participants and researchers were both blinded to assigned group. All people with a positive AUDIT-C screen for harmful drinking received brief, standard alcohol risk-reduction advice; however this advice was given equally across treatment groups.
Risk of bias due to deviations from intended interventions (adherence)	Some concerns	Adherence to all text queries was achieved by 33% of participants. There is no evidence to suggest if participants were engaged with the intervention, although a response rate of approximately 70% in the final week of the intervention suggests engagement was relatively high. It is possible that recruitment prompted participants to seek additional treatment, which is likely to be particularly true for participants receiving feedback

Bibliographic reference/s	**Suffoletto B, Kristan J, Chung T, Jeong K, Fabio A, Monti P, Clark DB. An interactive text message intervention to reduce binge drinking in young adults: a randomized controlled trial with 9-month outcomes. PloS one. 2015 Nov 18;10(11):e0142877.**		
Study name	An interactive text message intervention to reduce binge drinking in young adults		
			on their drinking behaviour (SMS+F group only); whether participants sought additional treatment was not examined.
	Missing outcome data	Low	Biases due to attrition are likely to be equal across groups as there were no differences in attrition between groups. Missing outcome data was mitigated through intention to treat analysis.
	Risk of bias in measurement of the outcome	Some concerns	Self-reported outcome measures made via web-based questionnaire. Although participants were blinded to allocation, inference of allocation is likely and therefore might bias the self-reported outcome. Baseline data collected using self-guided web-based entry system and friends and family were asked to leave the room to help minimise reporting bias. ED physician asked if they thought the care in ED was related to alcohol (therefore independent report, not biased by self-report).
	Risk of bias in selection of the reported result	Low	No evidence of selective outcome reporting.
	Other sources of bias	None identified	
	Overall Risk of Bias	Some concerns	
Source of funding	The study was supported by an Emergency Medicine Foundation Grant. Dr. Suffoletto is supported by K23 AA023284. Dr. Monti is supported by K05 AA019681 and P01 AA019072. D. Clark is supported by R01AA016482 and P50DA05605.X		
Comments	$10 reimbursement for time provided after completion of a web-based baseline assessment and reimbursed US$20 at 3-months, US$30 at 6-months and US$40 at 9-months questionnaire submission.		
Additional references	Any other publications which have contributed evidence to this data extraction for the study		
Behaviour change techniques (16 theoretical clusters)	Scheduled consequences		
	Reward and threat		
	Repetition and substitution		
	Antecedents		
	Associations		
	Covert Learning		

Bibliographic reference/s	**Suffoletto B, Kristan J, Chung T, Jeong K, Fabio A, Monti P, Clark DB. An interactive text message intervention to reduce binge drinking in young adults: a randomized controlled trial with 9-month outcomes. PloS one. 2015 Nov 18;10(11):e0142877.**	
Study name	An interactive text message intervention to reduce binge drinking in young adults	
	Natural Consequences	
	Feedback and monitoring	X
	Goals and planning	X
	Social support	
	Self-belief	
	Comparison of outcomes	
	Identity	
	Shaping knowledge	
	Regulation	
	Comparison of behaviour	

Appendix G – Summary of characteristics of the interventions

Summary of characteristics of the interventions that showed evidence of effectiveness

Study details	Key features	Intensity/duration	Tailoring
Significant difference found between intervention & control in outcomes relating to alcohol consumption in adults and those under 18 years			
Bertholet 2015 Computer tailored programme	Normative feedback on: • calorific value of reported consumption • indication of risk • information on alcohol and health • recommendations indicating low risk drinking limits.	1 session	Tailored feedback on drinking habits given by an automated website.
Boβ 2018 Computer tailored programme	5 modules that contained • general information on alcohol • pros and cons of drinking with illustrative examples • interactive exercises, quizzes, audio and video files, and downloadable work sheets. The study integrated emotional regulation techniques. 1 arm was a self-guided, 1 arm was guided by e-Coaches.	5 weeks	Feedback is given by the website which is dependent on the answers given by participants.
Collins 2014 Computer tailored programme	A novel intervention based on decisional balance feedback. Feedback on self-reported responses included: • perceived advantages and disadvantages of current drinking • images and text • qualitative content of responses and likelihood and importance of each advantage and disadvantage. *Only effective for number of alcohol-related problems past 30 days*	1 session	Personalised feedback is given based on participants' individual alcohol consumption.

Study details	Key features	Intensity/duration	Tailoring
Significant difference found between intervention & control in outcomes relating to alcohol consumption in adults and those under 18 years			
Doumas 2011 Computer tailored programme	Normative feedback on: • calorific value of reported consumption • indication of risk • information on alcohol and health • recommendations indicating low risk drinking limits. *Only effective for weekly drinking quantity and binge drinking frequency previous 2 weeks.*	1 30-minute session.	The intervention is tailored according the amount the participant drinks.
Hester 2012 Computer tailored programme	Web-based personalised feedback. 3 modules including: • decisional balance exercise • assessment of drinking and drug use • alcohol-related problems • risk factors for future alcohol-related problems Normative feedback using peers as reference, readiness for change and a plan to reduce consumption.	1 35-minute session	The resource gives feedback based on participants self-reported consumption levels.
LaBrie 2013 Computer tailored programme	Personalised normative feedback specific to the individual based on sex, race and Greek status. Feedback on: • quantity and frequency of participants' drinking • perceptions of drinking norms of peers • actual drinking norms of their peers. *Only effective for total weekly drinks*	1 session	The resource was feedback based on participants self-reported consumption levels.

Study details	Key features	Intensity/duration	Tailoring
Significant difference found between intervention & control in outcomes relating to alcohol consumption in adults and those under 18 years			
Leeman 2016 Computer tailored programme	The intervention contained protective behavioural strategies (PBS): • directly relating to drinking behaviours (e.g., alternating alcoholic and non-alcoholic drinks) • indirectly relating to drinking (e.g., carry protection for sexual encounters). 3 arms: direct only; indirect only; direct and indirect. Drinking frequency and quantity was provided over 4 pages of graphs and text with their perception of peers' consumption and actual student norms. *Only effective for total weekly drinks*	1 session	The resource was feedback based on participants self-reported consumption levels.
Schulz 2013 Computer tailored programme	Feedback to increase knowledge, pros and cons of drinking, social influence of drinking, action plans, self-efficacy and coping.	3 sessions	Tailored based on alcohol consumption, pregnancy, social influence, and overcoming difficulties

Summary of studies found to be ineffective (in terms of statistical significance), baseline change intervention vs control:

Study details	Key features	Intensity/duration	Tailoring
Carey 2017 Computer tailored programme	3 modules that include: • decisional balance exercises • assessment of drinking and drug use	1 session, 35 minutes	Personalised feedback is given, and plans are developed based on readiness for change

Study details	Key features	Intensity/duration	Tailoring
	• personalised normative feedback back based on gender and university norms • a plan developed based on their readiness for change • rating the importance of the "good things" and "not so good things" about drinking. *Effective but no more effective than control*		
Collins 2014 Computer tailored programme	A novel intervention based on decisional balance feedback. Feedback on self-reported responses included: • perceived advantages and disadvantages of current drinking • images and text • qualitative content of responses and likelihood and importance of each advantage and disadvantage.	1 session	Personalised feedback is given based on participants' individual alcohol consumption.
Epton 2014 Computer tailored programme	Modules were given on exercise, fruit and vegetable intake, and to restrict binge drinking and smoking. Values important to participants' health were reiterated through the modules. Activity planner to form implementation intentions.	4 weeks	Not reported
LaBrie 2013 Computer tailored programme	Personalised normative feedback specific to the individual based on sex, race and Greek status. Feedback on: • quantity and frequency of participants' drinking • perceptions of drinking norms of peers • actual drinking norms of their peers.	1 session	The resource was feedback based on participants self-reported consumption levels.
Norman 2018 Computer tailored programme	Self-affirmation manipulation: rated to what extent 32 positive traits apply to themselves Information about binge drinking: targeted 3 beliefs and gave advice around activities not to do with drinking	1 session	Resource was feedback based on participants self-reported consumption levels and drivers.

Study details	Key features	Intensity/duration	Tailoring
	Implementation intentions: forming if-then plans to avoid drinking *Effective but not more effective than control*		
Walters 2009 Computer tailored programme	Normative feedback on: • calorific value of reported consumption • indication of risk • information on alcohol and health • recommendations indicating low risk drinking limits.	1 session	Resource was feedback based on participants self-reported consumption levels and beliefs.
Suffoletto 2015 Text message intervention	2-way automated dialogue sessions on Thursday and Sunday to set goals, record weekend drinking and provide tailored feedback supporting low consumption or encouraged reflection for high consumption. 2 arms: 1 group had consumption-related feedback; 1 group had behaviour-related feedback.	12 weeks	Tailored feedback was given, to either support low weekend alcohol consumption or aimed to encourage reflection on their alcohol consumption.

Summary of studies found to be ineffective (in terms of statistical significance), baseline change intervention vs other intervention:

Study details	Key features	Intensity/duration	Tailoring
Cunningham 2009 Computer tailored programme	Each participant receives a personalised drinking profile, which includes normative feedback pie charts, and a summary of the participant's severity of alcohol problems.	One 10-minute session	The intervention is tailored according the amount the participant drinks.
Brendryen 2017	Web-based interactive session, emails and text messages. Focused on: • goal setting and tracking of alcohol consumption	62 sessions over 23 weeks.	Personalised feedback is given to participants if they report relapsing.

Study details	Key features	Intensity/duration	Tailoring
Computer tailored programme	• relapse prevention • emotional regulation • alcohol education.		
Doumas 2011 Computer tailored programme	Normative feedback on: • calorific value of reported consumption • indication of risk • information on alcohol and health • recommendations indicating low risk drinking limits. *Not effective for peak alcohol consumption past month and alcohol-related consequences past 30 days*	1 30-minute session.	The intervention is tailored according the amount the participant drinks.
Haug 2017	Individually tailored text messages for smoking cessation. Text messages includes links to video clips, pictures and websites. Individually tailored web-based feedback on their drinking and a weekly text message that encouraged restricting binge drinking. *Effective but not more effective than control*	Once/twice weekly for 3 months	Resource was feedback based on participants self-reported consumption levels.
LaBrie 2013 Computer tailored programme	Personalised normative feedback specific to the individual based on sex, race and Greek status. Feedback on: • quantity and frequency of participants' drinking • perceptions of drinking norms of peers • actual drinking norms of their peers. *Not effective for peak no. drinks, no. days drinking, and alcohol-related negative consequences*	1 session	The resource was feedback based on participants self-reported consumption levels.
Norman 2018 Computer tailored programme	Self-affirmation manipulation: rated to what extent 32 positive traits apply to themselves Information about binge drinking: targeted 3 beliefs and gave advice around activities not to do with drinking	1 session	Resource was feedback based on participants self-reported consumption levels and drivers.

Study details	Key features	Intensity/duration	Tailoring
	Implementation intentions: forming if-then plans to avoid drinking *Effective but not more effective than control*		
Walters 2009 Computer tailored programme	Normative feedback on: • calorific value of reported consumption • indication of risk • information on alcohol and health • recommendations indicating low risk drinking limits.	1 session	Resource was feedback based on participants self-reported consumption levels and beliefs.
Crombie 2018 Text message intervention	112 text messages delivering narrative on a problem drinking character. Texts provided information on heavy drinking, modelling steps in behaviour change process and monitoring consumption.	3 months; daily/near daily texts	No, only asked participants if they or their friends had experienced harms to avoid the possibility of patronising experienced drinkers.
Suffoletto 2015 Text message intervention	2-way automated dialogue sessions on Thursday and Sunday to set goals and record weekend drinking. Tailored feedback supported low consumption or encouraged reflection for high consumption. 2 arms: 1 group had consumption-related feedback; 1 group had behaviour-related feedback.	12 weeks	Tailored feedback was given, to either support low weekend alcohol consumption or aimed to encourage reflection on their alcohol consumption.

Appendix H – GRADE tables

Comparison 1: Behavioural and health outcomes for digital and mobile health interventions (change from baseline, intervention vs no intervention control)*

Quality assessment							No of patients		Effect	Quality	GRADE profile
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Interventions	No intervention control	Absolute		
Mean difference in number of drinks per week (follow-up mean 6 months; Better indicated by lower values)											
9[a]	randomised trials	serious[1]	serious[2]	no serious indirectness	no serious imprecision	none	2544	2387	MD 1.49 lower (2.68 to 0.30 lower)	⊕⊕OO LOW	1.1
Mean difference in number of drinks per week – baseline consumption <14 units a week (follow-up mean 6 months; Better indicated by lower values)											
5[b]	randomised trials	very serious[3]	no serious inconsistency	no serious indirectness	serious[4]	none	1383	1367	MD 0.76 lower (1.77 lower to 0.24 higher)	⊕OOO VERY LOW	1.1
Mean difference in number of drinks per week – baseline consumption >14 units a week (follow-up mean 6 months; Better indicated by lower values)											
4[c]	randomised trials	serious[1]	very serious[5]	no serious indirectness	serious[4]	none	1161	1020	3.23 lower (6.38 lower to 0.08 lower)	⊕OOO VERY LOW	1.1
Mean difference in number of drinks per week – students ((follow-up mean 6 months; Better indicated by lower values)											
6[d]	randomised trials	serious[1]	serious[2]	no serious indirectness	serious[4]	none	1752	1736	MD 0.63 lower (1.48 lower to 0.21 higher)	⊕OOO VERY LOW	1.1
Mean difference in number of drinks per week – non-students ((follow-up mean 6 months; Better indicated by lower values)											
3[e]	randomised trials	serious[1]	very serious[5]	no serious indirectness	serious[4]	none	792	651	MD 3.87 lower (7.68 to 0.06 lower)	⊕OOO VERY LOW	1.1
Mean difference in number of drinks per week (follow-up mean 12 months; Better indicated by lower values)											
2[f]	randomised trials	very serious[3]	no serious inconsistency	no serious indirectness	no serious imprecision	none	252	263	MD 1.28 lower (2.93 lower to 0.37 higher)	⊕⊕OO LOW	1.2
Mean difference in number of days drinking per week (follow-up mean 6 months; Better indicated by lower values)											
2[g]	randomised trials	very serious[6]	no serious inconsistency	no serious indirectness	no serious imprecision	none	429	415	MD 1.15 lower (2.04 to 0.27 lower)	⊕⊕OO LOW	1.3
Mean difference in number of days drinking per week (follow-up mean 12 months; Better indicated by lower values)											
2[g]	randomised trials	very serious[6]	no serious inconsistency	no serious indirectness	no serious imprecision	none	429	415	MD 0.52 lower (1.23 lower to 0.18 higher)	⊕⊕OO LOW	1.4
Mean difference in number of alcohol-related problems past 30 days (follow-up mean 6 months; Better indicated by lower values)											
5[h]	randomised trials	serious[7]	very serious[5]	no serious indirectness	serious[4]	none	1029	1020	MD 2.1 lower (4.49 lower to 0.29 higher)	⊕OOO VERY LOW	1.5
Mean difference in number of alcohol-related problems past 30 days - <14 units/week (follow-up mean 6 months; Better indicated by lower values)											
4[e]	randomised trials	serious[7]	very serious[5]	no serious indirectness	serious[4]	none	662	650	2.80 lower (5.393 lower to 0.31 higher)	⊕OOO VERY LOW	1.5

Mean difference in number of alcohol-related problems past 30 days - >14 units/week (follow-up mean 6 months; Better indicated by lower values)											
1[j]	randomised trials	serious[8]	N/A	no serious indirectness	serious[4]	none	367	370	0.15 lower (0.42 lower to 0.12 higher)	⊕⊕OO LOW	1.5
Mean difference in number of alcohol-related problems past 30 days (follow-up mean 12 months; Better indicated by lower values)											
2[g]	randomised trials	very serious[6]	very serious[5]	no serious indirectness	serious[4]	none	429	415	MD 3.23 lower (8.01 lower to 1.55 higher)	⊕OOO VERY LOW	1.6
Mean difference in number of days binge drinking past 7 days (follow-up mean 6 months; Better indicated by lower values)											
4[k]	randomised trials	very serious[9]	very serious[5]	no serious indirectness	very serious[10]	none	1649	1428	MD 0.07 lower (0.20 lower to 0.14 higher)	⊕OOO VERY LOW	1.7
Mean difference in number of days binge drinking past 7 days - Internet-based interventions (follow-up mean 6 months; Better indicated by lower values)											
3[l]	randomised trials	very serious[9]	no serious inconsistency	no serious indirectness	very serious[10]	none	1265	1243	MD 0.03 lower (0.12 lower to 0.05 higher)	⊕OOO VERY LOW	1.7
Mean difference in number of days binge drinking past 7 days - Text message-based interventions (follow-up mean 6 months; Better indicated by lower values)											
1[m]	randomised trials	serious[11]	N/A	no serious indirectness	serious[4]	none	384	185	MD 0.7 lower (1.26 lower to 0.14 lower)	⊕⊕OO LOW	1.7
Mean difference in peak number of drinks in previous 30 days (follow-up mean 6 months; Better indicated by lower values)											
2[n]	randomised trials	very serious[12]	no serious inconsistency	no serious indirectness	no serious imprecision	none	347	350	MD 0.6 lower (1.44 lower to 0.24 higher)	⊕⊕OO LOW	1.8
Mean difference in peak number of drinks in previous 30 days (follow-up mean 12 months; Better indicated by lower values)											
2[f]	randomised trials	very serious[13]	no serious inconsistency	no serious indirectness	no serious imprecision	none	252	263	MD 0.65 lower (1.28 to 0.01 lower)	⊕⊕OO LOW	1.9
Mean difference in peak number of drinks in previous 30 days - <14 units/week (follow-up mean 12 months; Better indicated by lower values)											
1[n]	randomised trials	very serious[13]	N/A	no serious indirectness	no serious imprecision	none	187	184	0.3 lower (1.13 lower to 0.53 higher)	⊕⊕OO LOW	1.9
Mean difference in peak number of drinks in previous 30 days - >14 units/week (follow-up mean 12 months; Better indicated by lower values)											
1[o]	randomised trials	very serious[3]	N/A	no serious indirectness	no serious imprecision	none	65	79	0.95 lower (1.171 lower to 0.19 lower)	⊕⊕OO LOW	1.9
Mean difference in drinks per day drinking (follow-up mean 6 months; Better indicated by lower values)											
1[m]	randomised trials	serious[11]	N/A	no serious indirectness	no serious imprecision	none	384	185	MD 0.5 lower (0.88 lower to 0.12 lower)	⊕⊕⊕O MODERATE	1.10
Mean difference in AUDIT score (follow-up mean 6 months; Better indicated by lower values)											
1[j]	randomised trials	serious[14]	N/A	no serious indirectness	no serious imprecision	none	367	370	MD 0.79 lower (1.41 lower to 0.17 lower)	⊕⊕⊕O MODERATE	1.11

a) Bertholet 2015, Boß 2018, Carey 2017, Collins 2014, Epton 2014, LaBrie 2013, Norman 2018, Schulz 2013, Walters 2009
b) Carey 2017, Collins 2014, Epton 2014, LaBrie 2013, Walters 2009
c) Bertholet 2015, Boß 2018, Norman 2018, Schulz 2013
d) Carey 2019, Collins 2014, Epton 2014, LaBrie 2013, Norman 2018, Walters 2009
e) Bertholet 2015, Boß 2018, Schulz 2013
f) Hester 2012, LaBrie 2013
g) Collins 2014, LaBrie 2013
h) Bertholet 2015, Carey 2017, Collins 2014, LaBrie 2013, Walters 2009
i) Carey 2017, Collins 2014, LaBrie 2013, Walters 2009
j) Bertholet 2015

k) Carey 2017, Epton 2014, Norman 2018, Suffoletto 2015
l) Carey 2017, Epton 2014, Norman 2018
m) Suffoletto 2015
n) Carey 2017, LaBrie 2013
o) Hester 2012

[1] >33% of the weight of the outcome came from studies with some concerns of bias (downgraded for: deviations from intended intervention (adherence); missing outcome data; measurement of the outcome; selection of reported result)
[2] I^2 at >50% suggestion moderate heterogeneity between studies.
[3]>33% of the weight of the outcome came from studies at high risk of bias (high risk for: deviations from intended interventions (adherence); some concerns for missing outcome data; measurement of the outcome; selection of the reported result).

[4] Crosses one MID threshold
[5] I^2 at >75% suggestion high heterogeneity between studies. I^2 at >75% suggestion high heterogeneity between studies.
[6] >33% of the weight of the outcome came from studies at high risk of bias (high risk for: deviations from intended intervention (adherence); some concerns for: missing outcome data; selection of reported result)
[7] >33% of the weight of the outcome came from studies with some concerns of bias (downgraded for: deviations from intended intervention (adherence); selection of reported result)
[8] Study had some concerns of bias in selection of reported result.

[9] >33% of the weight of the outcome came from studies at high risk of bias (high risk for: deviations from intended interventions (adherence); some concerns for: missing outcome data measurement of outcome; selection of the reported result)
[10] Crosses two MID thresholds.
[11] >33% of the weight of the outcome came from studies with some concerns of bias (deviations from intended interventions (adherence); some concerns for: measurement of outcome).
[12] >33% of the weight of the outcome came from studies at high risk of bias (high risk for: deviations from intended interventions (adherence); some concerns for: missing outcome data; selection of the reported result).
[13]>33% of the weight of the outcome came from studies at high risk of bias (high risk for: deviations from intended interventions (assignment and adherence); some concerns for randomisation process, measurement of the outcome, missing outcome data and selection of the reported result).
[14] >33% of the weight of the outcome came from studies with some concerns of bias (selection of the reported result).
* All outcomes for this comparison are found in this table. Subgroup analysis and outcomes at different timepoints are found sequentially in the table. Summary of evidence tables list outcomes from all three comparisons sequentially. Outcomes can be matched between GRADE tables and the summary of evidence table by their GRADE profile numbers.

Comparison 2: Behavioural and health outcomes for digital and mobile health interventions (change from baseline, intervention vs active control)*

Quality assessment							No of patients		Effect	Quality	GRADE profile
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Interventions	Active controls	Absolute		
Mean difference in number of drinks per week (follow-up mean 6 months; Better indicated by lower values)											
4[a]	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	1586	1564	MD 0.31 lower (1.20 lower to 0.59 higher)	⊕⊕OO LOW	2.1

Mean difference in number of drinks per week - students (follow-up mean 6 months; Better indicated by lower values)											
3[b]	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	1440	1422	MD 0.17 lower (1.00 lower to 0.67 higher)	⊕⊕OO LOW	2.1
Mean difference in number of drinks per week – non-students (follow-up mean 6 months; Better indicated by lower values)											
1[c]	randomised trials	very serious[2]	N/A	no serious indirectness	no serious imprecision	none	146	142	MD 0.76 lower (1.82 lower to 0.30 higher)	⊕⊕OO LOW	2.1
Mean difference in number of drinks per week (follow-up mean 12 months; Better indicated by lower values)											
2[d]	randomised trials	very serious[3]	no serious inconsistency	no serious indirectness	no serious imprecision	none	679	682	MD 0.39 higher (0.96 lower to 1.74 higher)	⊕⊕OO LOW	2.2
Mean difference in number of drinks per week - Internet-based interventions (follow-up mean 12 months; Better indicated by lower values)											
1[e]	randomised trials	very serious[3]	N/A	no serious indirectness	no serious imprecision	none	330	324	MD 0.4 higher (1.01 lower to 1.81 higher)	⊕⊕OO LOW	2.2
Mean difference in number of drinks per week - Text message-based interventions (follow-up mean 12 months; Better indicated by lower values)											
1[f]	randomised trials	no serious risk of bias	N/A	no serious indirectness	no serious imprecision	none	349	358	MD 0.28 higher (4.31 lower to 4.86 higher)	⊕⊕⊕⊕ HIGH	2.2
Mean difference in number of days drinking per week (follow-up mean 6 months; Better indicated by lower values)											
1[g]	randomised trials	very serious[1]	N/A	no serious indirectness	no serious imprecision	none	187	183	MD 0.50 lower (0.44 lower to 1.44 higher)	⊕⊕OO LOW	2.3
Mean difference in number of days drinking per week (follow-up mean 12 months; Better indicated by lower values)											
1[e]	randomised trials	very serious[3]	N/A	no serious indirectness	no serious imprecision	none	187	183	MD 0.2 higher (0.77 lower to 1.17 higher)	⊕⊕OO LOW	2.4
Mean difference in number of alcohol-related problems past 30 days (follow-up mean 6 months; Better indicated by lower values)											
1[h]	randomised trials	very serious[1]	N/A	no serious indirectness	serious[4]	none	187	183	MD 1.20 lower (2.43 lower to 0.03 higher)	⊕⊕OO LOW	2.5
Mean difference in number of alcohol-related problems past 30 days (follow-up mean 12 months; Better indicated by lower values)											
1[e]	randomised trials	very serious[3]	N/A	no serious indirectness	no serious imprecision	none	187	138	MD 0.4 lower (1.69 lower to 0.89 higher)	⊕⊕OO LOW	2.5
Mean difference in number of days binge drinking past 7 days (follow-up mean 6 months; Better indicated by lower values)											
2[i]	randomised trials	very serious[3]	no serious inconsistency	no serious indirectness	no serious imprecision	none	718	726	MD 0.01 lower (0.11 lower to 0.08 higher)	⊕⊕OO LOW	2.6
Mean difference in number of days binge drinking past 7 days - Internet-based interventions (follow-up mean 6 months; Better indicated by lower values)											
1[j]	randomised trials	very serious[3]	no serious inconsistency	no serious indirectness	no serious imprecision	none	369	368	MD 0.1 lower (0.12 lower to 0.09 higher)	⊕⊕OO LOW	2.6
Mean difference in number of days binge drinking past 7 days - Text message-based interventions (follow-up mean 6 months; Better indicated by lower values)											
1[f]	randomised trials	no serious risk of bias	N/A	no serious indirectness	no serious imprecision	none	349	358	MD 0.01 lower (0.2 lower to 0.18 higher)	⊕⊕⊕⊕ HIGH	2.6
Mean difference in peak number of drinks in previous 30 days (follow-up mean 6 months; Better indicated by lower values)											
1[k]	randomised trials	very serious[3]	N/A	no serious indirectness	no serious imprecision	none	187	183	MD 0.50 higher (0.32 lower to 1.32 higher)	⊕⊕OO LOW	2.7
Mean difference in peak number of drinks in previous 30 days (follow-up mean 12 months; Better indicated by lower values)											

1[e]	randomised trials	very serious[3]	N/A	no serious indirectness	very serious[5]	none	187	183	MD 0.53 lower (2.83 lower to 1.78 higher)	⊕OOO VERY LOW	2.8

a) Boβ 2018, Carey 2017, LaBrie 2013, Norman 2018
b) Carey 2017, LaBrie 2013, Norman 2018
c) Boβ 2018
d) LaBrie 2013, Crombie 2013
e) LaBrie 2013
f) Crombie 2013
g) LaBrie 2013
h) LaBrie 2013
i) Norman 2018, Crombie 2018
j) Norman 2018
k) LaBrie 2013

[1] >33% of the weight of the outcome from studies at high risk of bias (high risk for: deviations from intended interventions (adherence); some concerns for: randomisation process; deviations from intended interventions (assignment); measurement of the outcome; missing outcome data; selection of reported result).
[2] >33% of the weight of the outcome from studies at high risk of bias (high risk for: deviations from intended interventions (assignment); some concerns for: deviations from intended interventions (adherence); measurement of outcome; selection in reported result.
[3] >33% of the weight of the outcome from studies at high risk of bias (high risk for: deviations from intended interventions (adherence); some concerns for: missing outcome data; selection of the reported result).
[4] 95% crosses 1 MID threshold[5] 95% CI cross 2 MID thresholds

* All outcomes for this comparison are found in this table. Subgroup analysis and outcomes at different timepoints are found sequentially in the table. Summary of evidence tables list outcomes from all three comparisons sequentially. Outcomes can be matched between GRADE tables and the summary of evidence table by their GRADE profile numbers.

Comparison 3: Behavioural and health outcomes for digital and mobile health interventions (change from baseline, intervention vs other intervention)*

Quality assessment							No of patients		Effect	Quality	GRADE profile
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Intervention	Intervention	Absolute		
Mean difference in number of drinks per week (follow-up mean 6 months; Better indicated by lower values)											
8[a]	randomised trials	very serious[1]	serious[2]	no serious indirectness	no serious imprecision	none	1236	1203	MD 0.75 higher (1.46 lower to 2.96 higher)	⊕OOO VERY LOW	3.1
Mean difference in number of drinks per week - Internet-based interventions (follow-up mean 6 months; Better indicated by lower values)											
7[b]	randomised trials	very serious[1]	serious[2]	no serious indirectness	no serious imprecision	none	1090	1061	MD 1.25 higher (1.07 lower to 3.57 higher)	⊕OOO VERY LOW	3.1
Mean difference in number of drinks per week - students (follow-up mean 6 months; Better indicated by lower values)											
5[c]	randomised trials	very serious[3]	no serious inconsistency	no serious indirectness	serious[4]	none	955	925	MD 2.79 higher (0.6 to 4.89 higher)	⊕OOO VERY LOW	3.1
Mean difference in number of drinks per week – non-students (follow-up mean 6 months; Better indicated by lower values)											
3[d]	randomised trials	serious[5]	no serious inconsistency	no serious indirectness	no serious imprecision	none	281	278	MD 2.06 lower (3.90 lower to 0.22 lower)	⊕⊕⊕O MODERATE	3.1
Mean difference in number of drinks per week (follow-up mean 12 months; Better indicated by lower values)											
2[e]	randomised trials	very serious[5]	no serious inconsistency	no serious indirectness	serious[4]	none	438	429	MD 0.28 lower (1.80 lower to 1.24 higher)	⊕OOO VERY LOW	3.2
Mean difference in number days drinking per week (follow-up mean 6 months; Better indicated by lower values)											
2[f]	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[5]	none	438	429	MD 0.47 lower (1.95 lower to 1.01 higher)	⊕OOO VERY LOW	3.3
Mean difference in number days drinking per week - Internet-based interventions (follow-up mean 6 months; Better indicated by lower values)											
2[e]	randomised trials	very serious[5]	no serious inconsistency	no serious indirectness	no serious imprecision	none	438	429	MD 1.11 lower (2 to 0.21 lower)	⊕⊕OO LOW	3.3
Mean difference in number of days drinking per week (follow-up mean 12 months; Better indicated by lower values)											
2[e]	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	438	429	MD 0.04 higher (0.67 lower to 0.76 higher)	⊕⊕OO LOW	3.4
Mean difference in number of alcohol-related problems past 30 days (follow-up mean 6 months; Better indicated by lower values)											
4[g]	randomised trials	very serious[1]	serious[2]	no serious indirectness	no serious imprecision	none	592	550	MD 0.1 higher (1.24 lower to 1.44 higher)	⊕OOO VERY LOW	3.5
Mean difference in number of alcohol-related problems past 30 days (follow-up mean 12 months; Better indicated by lower values)											
2[e]	randomised trials	very serious[6]	very serious[7]	no serious indirectness	no serious imprecision	none	438	429	MD 0.45 lower (2.19 lower to 1.3 higher)	⊕OOO VERY LOW	3.6
Mean difference in number of days binge drinking past 7 days (follow-up mean 6 months; Better indicated by lower values)											
3[h]	randomised trials	very serious[1]	very serious[7]	no serious indirectness	no serious imprecision	none	834	619	MD 0.01 lower (0.4 lower to 0.38 higher)	⊕OOO VERY LOW	3.7
Mean difference in peak number of drinks in previous 30 days (follow-up mean 6 months; Better indicated by lower values)											

2[i]	randomised trials	very serious[5]	no serious inconsistency	no serious indirectness	no serious imprecision	none	268	241	MD 0.77 higher (0.01 lower to 1.56 higher)	⊕⊕OO LOW	3.8
Mean difference in peak number of drinks previous 30 days (follow-up mean 12 months; Better indicated by lower values)											
1[g]	randomised trials	very serious[8]	N/A	no serious indirectness	no serious imprecision	none	187	187	MD 0.2 lower (1.03 lower to 0.63 higher)	⊕⊕OO LOW	3.9
Mean difference in drinks per day drinking (follow-up mean 6 months; Better indicated by lower values)											
1[k]	randomised trials	serious[9]	serious[2]	no serious indirectness	serious[5]	none	384	196	MD 0.60 lower (1.37 lower to 0.17 higher)	⊕OOO VERY LOW	3.10
Mean difference in drinks per day drinking - Text message-based interventions (follow-up mean 6 months; Better indicated by lower values)											
1[l]	randomised trials	serious[10]	N/A	no serious indirectness	no serious imprecision	none	384	196	MD 0.6 lower (1.37 lower to 0.17 higher)	⊕⊕⊕O MODERATE	3.10
Mean difference in AUDIT-C score (follow-up mean 6 months; Better indicated by lower values)											
1[m]	randomised trials	serious[10]	no serious inconsistency	no serious indirectness	no serious imprecision	none	92	93	MD 0.7 lower (1.33 to 0.07 lower)	⊕⊕⊕O MODERATE	3.11

a) Brendryen 2014, Boß 2018, Collins 2014, Cunningham 2014, Doumas 2011, LaBrie 2013, Norman 2018, Walters 2009
b) Brendryen 2014, Boß 2018, Collins 2014, Cunningham 2014, Doumas 2011, LaBrie 2013, Norman 2018
c) Collins 2014, Doumas 2011, LaBrie 2013, Norman 2018, Walters 2009
d) Boß 2018, Brendryen 2014, Cunningham 2014
e) Collins 2014, LaBrie 2013
f) Collins 2014, LaBrie 2013
g) Collins 2014, Doumas 2011, LaBrie 2013, Walters 2009
h) Doumas 2011, Norman 2018, Suffoletto 2015
i) Doumas 2011, LaBrie 2013
j) LaBrie 2013
k) Suffoletto 2015, Rose 2017
l) Suffoletto 2015
m) Cunningham 2009

[1] >33% of weight of outcome from studies at high risk of bias (high risk of bias for: deviations from intended interventions (adherence); some concerns for: randomisation process; deviations from intended interventions (assignment); missing outcome data; measurement of outcome; selection of reported result).
[2] I^2 >50% suggesting moderate heterogeneity between studies.

[3] > 33% of weight of outcome from studies at high risk of bias (high risk for: deviations from intended interventions (adherence); some concerns for: measurement of outcome; missing outcome data; selection of reported result).
[4] 95% confidence interval crosses one MID threshold
[5] >33% of weight of outcome from studies at high risk of bias (high risk of bias for: deviations from intended interventions (adherence); some concerns for: randomisation process; deviations from intended interventions (assignment); missing outcome data; selection of reported result).

[6] >33% of weight of outcome from studies at high risk of bias (high risk of bias for: deviations from intended interventions (adherence); some concerns for: missing outcome data; selection of reported result).
[7] I^2 >75% suggesting high heterogeneity between studies.
[8] >33% of weight of outcome from studies at high risk of bias (high risk of bias for: deviations from intended interventions (adherence); some concerns for: missing outcome data; selection of reported result).
[9] >33% of weight of outcome from studies with some concerns of bias (some concerns for: deviations from intended interventions (adherence); measurement of outcome).
[10] >33% of weight of outcome from studies with some concerns of bias (some concerns for: deviations from intended interventions (adherence); measurement of outcome).
[11] >33% of weight of outcome from studies with some concerns of bias (some concerns for: selection of the reported result).
* All outcomes for this comparison are found in this table. Subgroup analysis and outcomes at different timepoints are found sequentially in the table. Summary of evidence tables list outcomes from all three comparisons sequentially. Outcomes can be matched between GRADE tables and the summary of evidence table by their GRADE profile numbers.

Appendix I – Health economic evidence profiles

Study	Crombie 2018			
Study details	**Population & interventions**	**Costs**	**Outcomes**	**Cost effectiveness**
Crombie 2018 (Scotland, UK) **Type of analysis:** CEA and CUA within trial analysis (1-year) based on an RCT conducted in 4 Scottish areas. A long-term model (30 years) was also constructed using the Sheffield Alcohol Policy Model to estimate acute and chronic health conditions, crime, workplace harms, costs attributable to alcohol. **Perspective:** Public sector, societal **Time horizon:** 1 and 30 years **Discounting:** 3.5% for costs and benefits	**Population:** Men aged 25–44 years who had ≥ 2 episodes of binge drinking[(a)] in the preceding 28 days, from areas of high deprivation **Population – sociodemographic factors/cohort settings:** Total (n=825) Mean age: 35.0 years Mean consumption in last 28 days (units): 134.0 **INTERVENTION** **Description:** Mobile text messages for reduction in binge drinking: series of 112 interactive text messages delivered by mobile phone over a 12-week period. **Mode:** Mobile (text messages)	**Currency & cost year:** GBP £; 2016 **Cost components incorporated:** • Recruitment costs (2 approaches - general practice registers and time-space sampling to target hard-to-reach groups) • Intervention costs (text delivery system, server hosting, staff salaries, gift voucher for recruitment and engagement) • Costs of healthcare, social and criminal justice services based on service use questionnaire for the trial period and Sheffield Alcohol Policy Model for the long-term period between 1 and 30 years Explored scaling by modelling 'equivalent trial population' (n=825) and 'nationwide (England and	Absolute outcomes for each strategy not reported separately. Incremental outcomes for intervention vs. do nothing were as follows: Incremental (1-year) reduction in people with ≥3 occasions of binge drinking = 0.078 Incremental short-term (1 year) QALYs = -0.0063[(b)] Incremental long-term (30 year) QALYs = -0.0034[(c)]	Incremental cost per one fewer person with ≥ 3 occasions of binge drinking at 1 year (nationwide rollout) = £357/0.078 = £4,576 Incremental cost per QALY (1 year): Intervention was dominated Incremental cost per QALY (30 year): Intervention was dominated **Analysis of uncertainty** Univariate and probabilistic sensitivity analyses were conducted. The probabilistic sensitivity analysis was based on bootstrapping of the trial's results over 12 months. There was high uncertainty around the incremental QALY results -0.006 (-0.037 to 0.025). When considering only the QALY gains to 12 months post intervention there was a 15% probability that the intervention would be cost effective at a threshold of £30,000 per QALY. The univariate sensitivity analyses showed that the intervention was dominated in most scenarios.

Study	Crombie 2018			
Study details	**Population & interventions**	**Costs**	**Outcomes**	**Cost effectiveness**
	Behaviour change techniques used: Goals and planning, social support, self-belief, comparison of outcomes, shaping knowledge **Intensity and duration:** 112 interactive text messages delivered by mobile phone over a 12-week period **Tailoring**: Yes (harm-related messages) **Healthcare professional involvement:** None **COMPARATOR:** Do nothing (assumed recruitment and implementation costs to be zero and service costs and effectiveness based on control arm of the RCT, 89 text messages that did not contain information on	Scotland) rollout' (n=248,417) Absolute costs for each strategy not reported separately. Incremental costs for intervention vs. do nothing were as follows: Incremental short-term (1 year) costs per participant assuming *combined recruitment* method: Equivalent trial population = £511 Nationwide rollout = £357 Incremental long-term (30 year) costs per participant assuming *combined recruitment* method: Nationwide rollout = £300 Incremental long-term (30 year) costs per participant assuming *general practice register* recruitment only: Nationwide rollout = £203 Incremental long-term (30 year) costs per participant assuming *time-space sampling* recruitment only: Nationwide rollout = £874		

Study	Crombie 2018			
Study details	**Population & interventions**	**Costs**	**Outcomes**	**Cost effectiveness**
	alcohol consumption only on general health)			
Data sources				
Health outcomes: Within trial analysis (reported within this publication); long-term outcomes modelled using Sheffield Alcohol Policy Model based on alcohol consumption observed in the trial at 1 year and assuming alcohol consumption of individuals in the intervention group rebounds linearly towards control group over a period of 7 years. **Quality-of-life weights:** QALYs were estimated using the EQ-5D-5L utility scores reported at 12 months post intervention and applied to the whole 12-month period post intervention. There was no baseline measurement of utility. Long-term quality of life was calculated using the Sheffield Alcohol Policy Model, multiple morbidity estimated as the product of utility for each health condition. **Cost sources:** Short-term resource use data (health care social, criminal justice) were based on a service use questionnaire collected at 12 months in the clinical trial; long-term costs (NHS and social services) were based on the Sheffield Alcohol Policy Model.				
Comments				
Source of funding: This study was funded by the National Institute for Health Research (NIHR) Public Health **Limitations:** The authors acknowledged some limitations of the analysis, including the use of an active control to represent standard practice (do nothing) that, combined with the recruitment procedures and baseline assessments, could have biased the treatment effect towards the null hypothesis (no significant difference). Measurement of alcohol consumption relied on self-reported drinking. No baseline measurement of EQ-5D-5L. Absolute costs not reported separately by comparator. **Other:** None				
Overall applicability: Directly applicable		**Overall quality:** Potentially serious limitations		

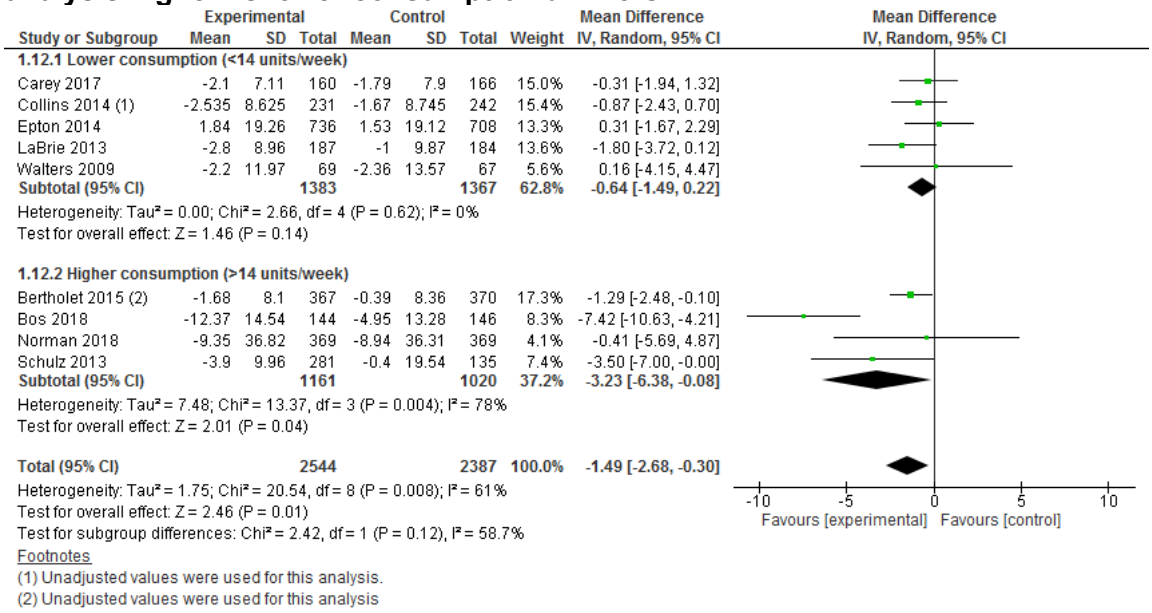
Abbreviations: CEA: cost-effective analysis; CUA: cost-utility analysis; QALY: quality-adjusted life year; RCT: randomised controlled trial

a) >8 units of alcohol in a single session
b) Although the intervention resulted in a reduction in the proportion of people with ≥3 occasions of binge drinking versus do nothing, the intervention generated fewer QALYs
c) The intervention arm generated more QALYs than do nothing between 1 and 30 years but when combined with the QALY difference from year 1, the intervention arm generated fewer QALYs overall

Appendix J – Forest plots

Comparison 1: Intervention vs control

1.1 Mean difference in number of drinks per week, baseline to 6 months: subgroup analysis higher vs lower consumption drinkers



Study or Subgroup	Experimental Mean	Experimental SD	Experimental Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
1.12.1 Lower consumption (<14 units/week)								
Carey 2017	-2.1	7.11	160	-1.79	7.9	166	15.0%	-0.31 [-1.94, 1.32]
Collins 2014 (1)	-2.535	8.625	231	-1.67	8.745	242	15.4%	-0.87 [-2.43, 0.70]
Epton 2014	1.84	19.26	736	1.53	19.12	708	13.3%	0.31 [-1.67, 2.29]
LaBrie 2013	-2.8	8.96	187	-1	9.87	184	13.6%	-1.80 [-3.72, 0.12]
Walters 2009	-2.2	11.97	69	-2.36	13.57	67	5.6%	0.16 [-4.15, 4.47]
Subtotal (95% CI)			**1383**			**1367**	**62.8%**	**-0.64 [-1.49, 0.22]**
Heterogeneity: Tau² = 0.00; Chi² = 2.66, df = 4 (P = 0.62); I² = 0%								
Test for overall effect: Z = 1.46 (P = 0.14)								
1.12.2 Higher consumption (>14 units/week)								
Bertholet 2015 (2)	-1.68	8.1	367	-0.39	8.36	370	17.3%	-1.29 [-2.48, -0.10]
Bos 2018	-12.37	14.54	144	-4.95	13.28	146	8.3%	-7.42 [-10.63, -4.21]
Norman 2018	-9.35	36.82	369	-8.94	36.31	369	4.1%	-0.41 [-5.69, 4.87]
Schulz 2013	-3.9	9.96	281	-0.4	19.54	135	7.4%	-3.50 [-7.00, -0.00]
Subtotal (95% CI)			**1161**			**1020**	**37.2%**	**-3.23 [-6.38, -0.08]**
Heterogeneity: Tau² = 7.48; Chi² = 13.37, df = 3 (P = 0.004); I² = 78%								
Test for overall effect: Z = 2.01 (P = 0.04)								
Total (95% CI)			**2544**			**2387**	**100.0%**	**-1.49 [-2.68, -0.30]**
Heterogeneity: Tau² = 1.75; Chi² = 20.54, df = 8 (P = 0.008); I² = 61%								
Test for overall effect: Z = 2.46 (P = 0.01)								
Test for subgroup differences: Chi² = 2.42, df = 1 (P = 0.12), I² = 58.7%								

Mean Difference IV, Random, 95% CI

-10 -5 0 5 10

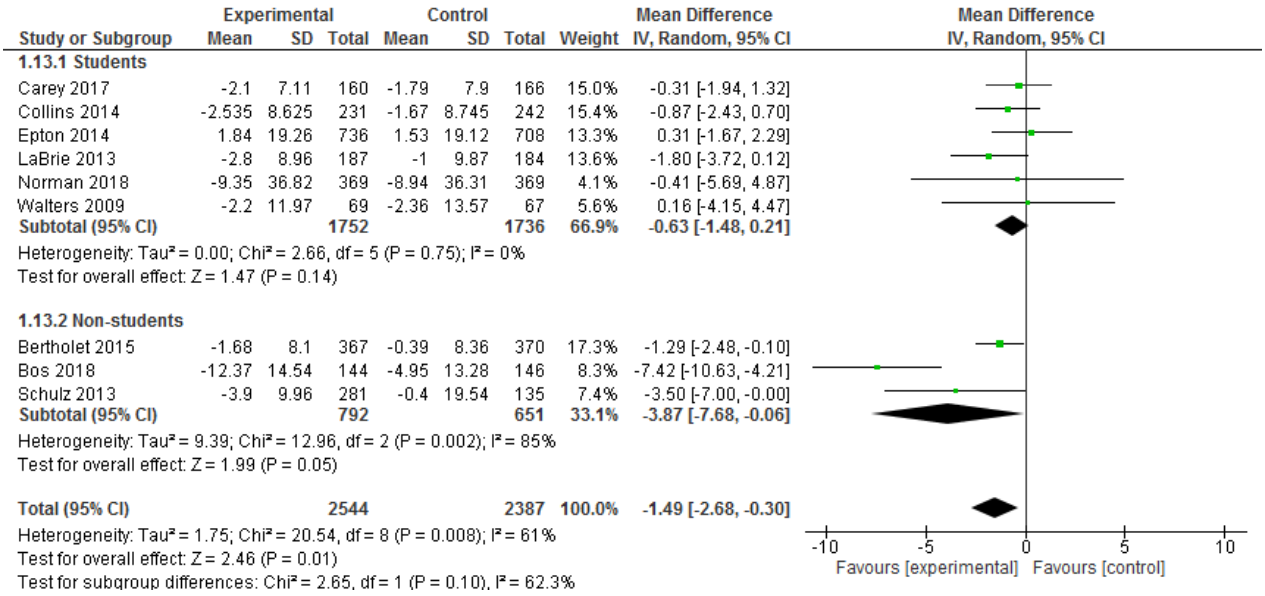
Favours [experimental] Favours [control]

Footnotes

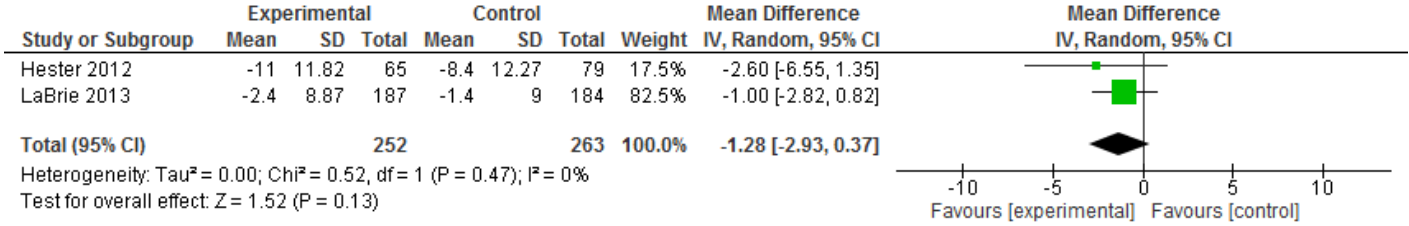
(1) Unadjusted values were used for this analysis.

(2) Unadjusted values were used for this analysis

1.2 Mean difference in number of drinks per week, baseline to 6 months: subgroup analysis students vs non-students



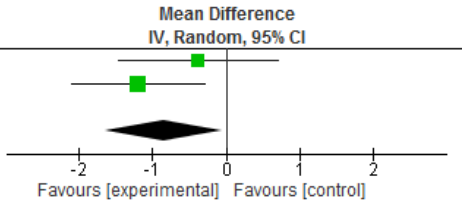
1.3 Mean difference in number of drinks per week, baseline to 12 months



1.4 Mean difference in number of days drinking per week, baseline to 6 months

Study or Subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
Collins 2014	-0.84	5.95	242	-0.46	6.03	231	43.5%	-0.38 [-1.46, 0.70]
LaBrie 2013 (1)	-1.5	4.6	187	-0.3	4.35	184	56.5%	-1.20 [-2.11, -0.29]
Total (95% CI)			**429**			**415**	**100.0%**	**-0.84 [-1.64, -0.05]**

Heterogeneity: Tau² = 0.08; Chi² = 1.29, df = 1 (P = 0.26); I² = 23%
Test for overall effect: Z = 2.07 (P = 0.04)

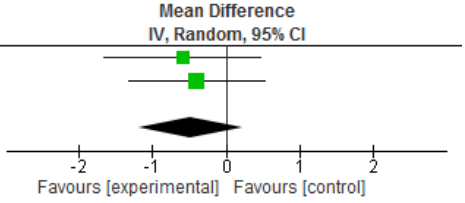


Footnotes
(1) LaBrie used a scale from 1 (I did not drink at all) to 7 (I drank every day).

1.5 Mean difference in number of days drinking per week, baseline to 12 months

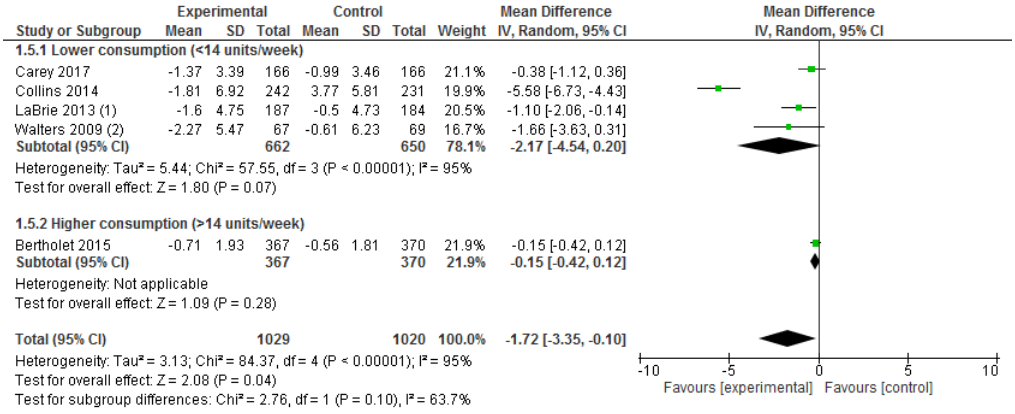
Study or Subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
Collins 2014	-1.05	5.8	242	-0.46	6.03	231	43.3%	-0.59 [-1.66, 0.48]
LaBrie 2013 (1)	-0.7	4.8	187	-0.3	4.35	184	56.7%	-0.40 [-1.33, 0.53]
Total (95% CI)			**429**			**415**	**100.0%**	**-0.48 [-1.18, 0.22]**

Heterogeneity: Tau² = 0.00; Chi² = 0.07, df = 1 (P = 0.79); I² = 0%
Test for overall effect: Z = 1.35 (P = 0.18)



Footnotes
(1) LaBrie used a scale from 1 (I did not drink at all) to 7 (I drank every day).

1.6 Mean difference in number of alcohol-related problems past 30 days, baseline to 6 months: sensitivity analysis by consumption

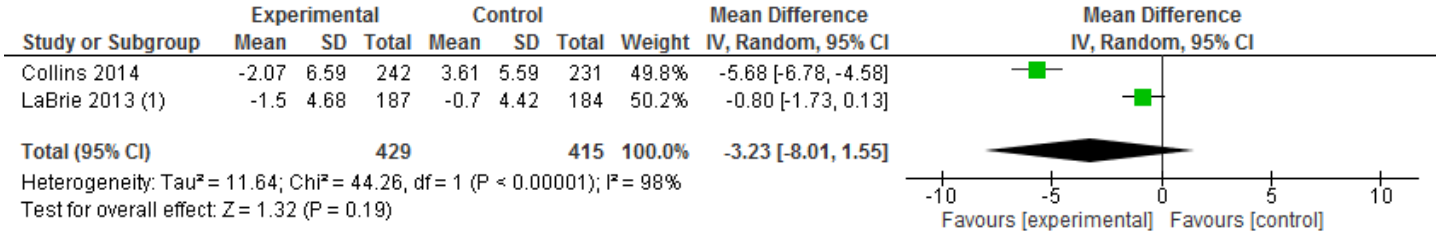


Footnotes

(1) LaBrie used the 25-item RAPI to quantify alcohol-related problems. Responses ranged from 0 (never) to 4 (10 or more times).

(2) Walters used the 23-item RAPI to quantify alcohol-related problems.

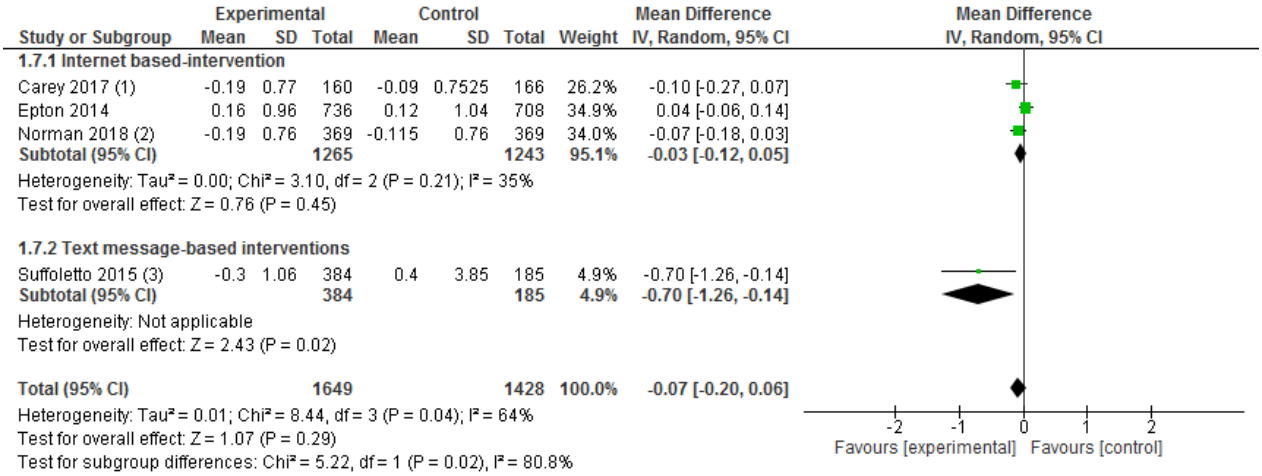
1.7 Mean difference in number of alcohol-related problems past 30 days, baseline to 12 months



Footnotes

(1) LaBrie used the 25-item RAPI to quantify alcohol-related problems. Responses ranged from 0 (never) to 4 (10 or more times).

1.8 Mean difference in number of days binge drinking past 7 days, baseline to 6 months: sensitivity analysis by digital platform



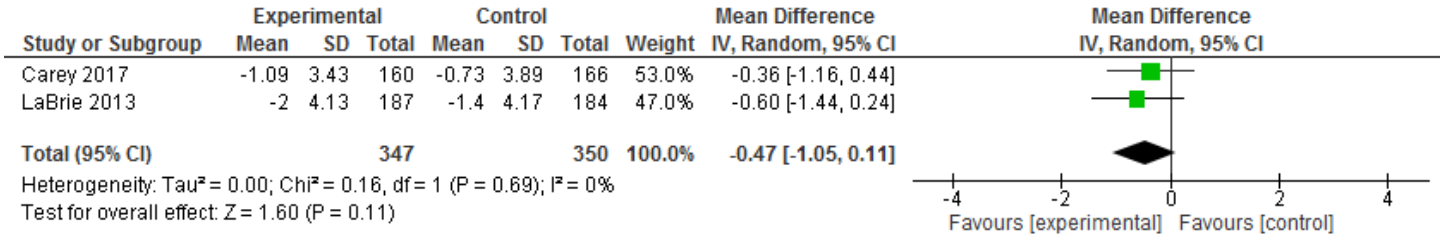
Footnotes

(1) Carey reported number of days drinking in previous months therefore reported results were divided by 4 for analysis

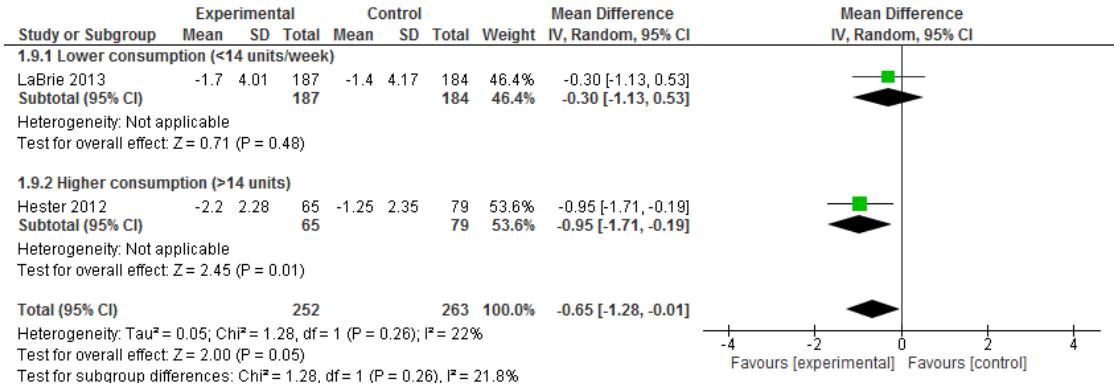
(2) Norman reported number of days drinking in previous month, therefore reported results were divided by 4 for analysis.

(3) Suffoletto reported number of days drinking in previous month, therefore reported results were divided by 4 for analysis.

1.9 Mean difference in peak number of drinks in previous 30 days, baseline to 6 months



1.10 Mean difference in peak number of drinks in previous 30 days, baseline to 12 months: sensitivity analysis by consumption

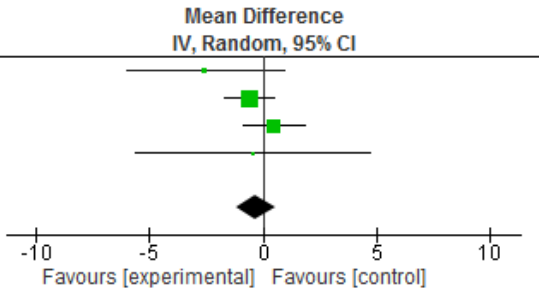


Comparison 2: Interventions vs active controls

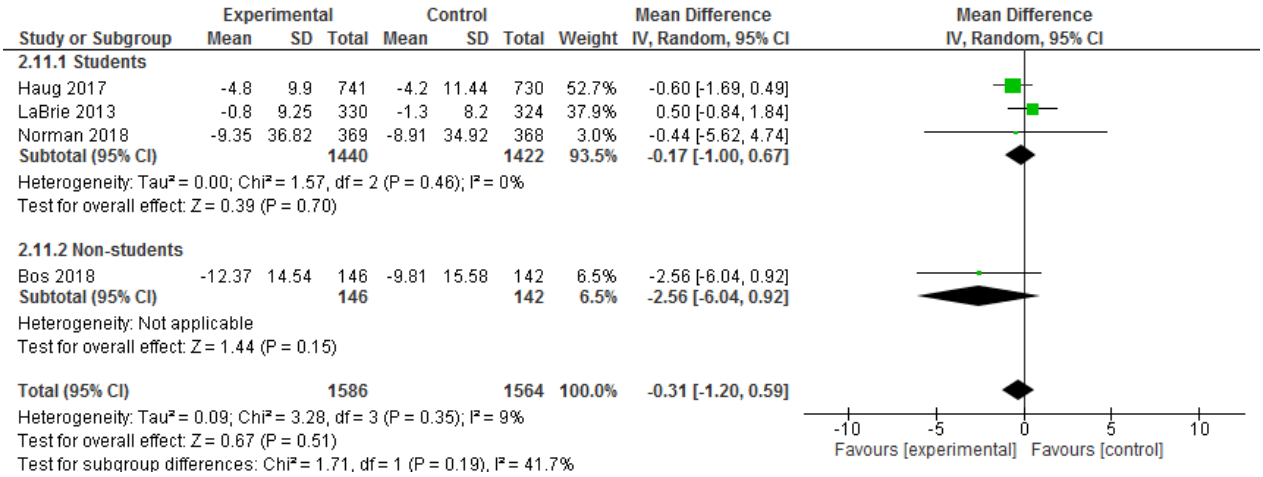
2.1 Mean difference in number of drinks per week, baseline to 6 months

Study or Subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
Bos 2018	-12.37	14.54	146	-9.81	15.58	142	6.5%	-2.56 [-6.04, 0.92]
Haug 2017	-4.8	9.9	741	-4.2	11.44	730	52.7%	-0.60 [-1.69, 0.49]
LaBrie 2013	-0.8	9.25	330	-1.3	8.2	324	37.9%	0.50 [-0.84, 1.84]
Norman 2018	-9.35	36.82	369	-8.91	34.92	368	3.0%	-0.44 [-5.62, 4.74]
Total (95% CI)			**1586**			**1564**	**100.0%**	**-0.31 [-1.20, 0.59]**

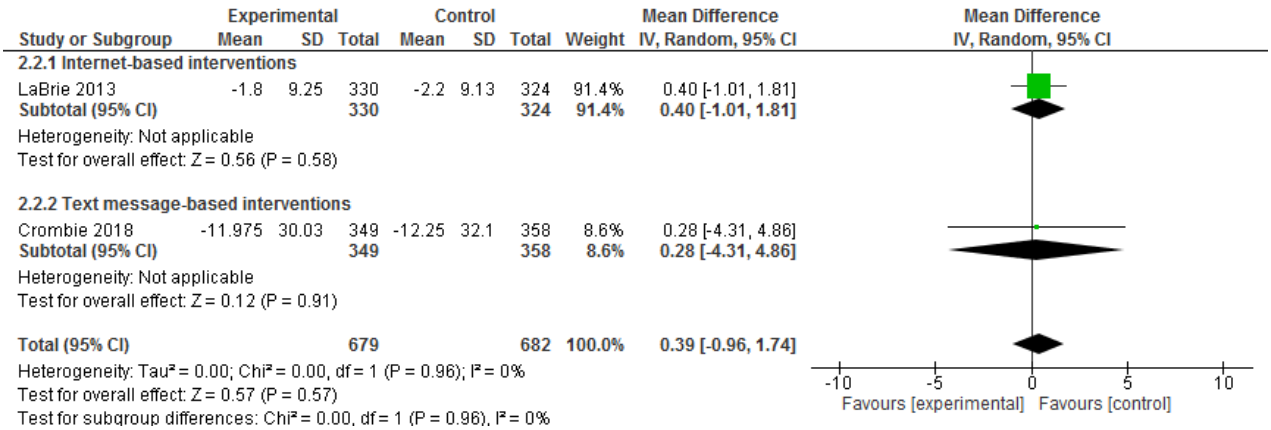
Heterogeneity: Tau² = 0.09; Chi² = 3.28, df = 3 (P = 0.35); I² = 9%
Test for overall effect: Z = 0.67 (P = 0.51)



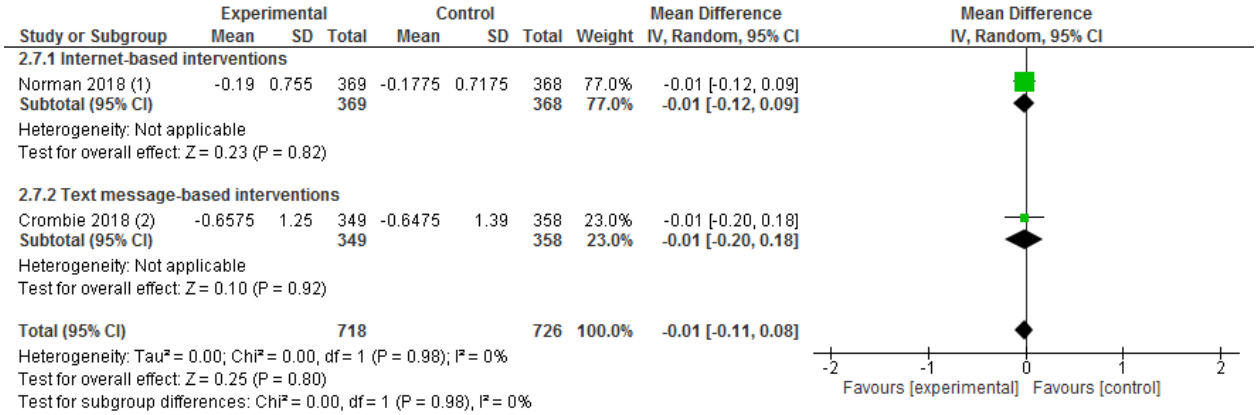
2.2 Mean difference in number of drinks per week, baseline to 6 months: sensitivity analysis by students



2.3 Mean difference in number of drinks per week, baseline to 12 months: sensitivity analysis by digital platform



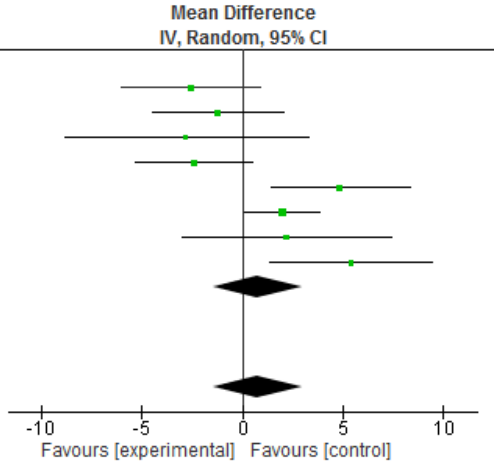
2.4 Mean difference in number of days binge drinking past 7 days, baseline to 6 months: sensitivity analysis by digital platform



Comparison 3: Intervention vs intervention

3.1 Mean difference in number of drinks per week, baseline to 6 months: sensitivity analysis by digital platform

Study or Subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
3.1.1 Internet-based interventions								
Bos 2018	-12.37	14.54	146	-9.81	15.58	142	13.0%	-2.56 [-6.04, 0.92]
Brendryen 2017	-3.6	7.01	43	-2.4	8.29	43	13.6%	-1.20 [-4.44, 2.04]
Collins 2014 (1)	-10.14	34.5	251	-7.35	34.11	242	7.9%	-2.79 [-8.85, 3.27]
Cunningham 2009	-2.8	10.05	92	-0.4	10.2	93	14.4%	-2.40 [-5.32, 0.52]
Doumas 2011	2.96	9.63	81	-1.91	10.32	54	13.1%	4.87 [1.41, 8.33]
LaBrie 2013	-0.8	9.25	187	-2.8	8.96	187	17.0%	2.00 [0.15, 3.85]
Norman 2018	-9.35	36.82	369	-11.55	35.29	369	9.3%	2.20 [-3.00, 7.40]
Walters 2009	-2.2	11.97	67	-7.62	12.55	73	11.7%	5.42 [1.36, 9.48]
Subtotal (95% CI)			**1236**			**1203**	**100.0%**	**0.75 [-1.46, 2.96]**
Heterogeneity: Tau² = 6.62; Chi² = 23.16, df = 7 (P = 0.002); I² = 70%								
Test for overall effect: Z = 0.67 (P = 0.51)								
Total (95% CI)			**1236**			**1203**	**100.0%**	**0.75 [-1.46, 2.96]**
Heterogeneity: Tau² = 6.62; Chi² = 23.16, df = 7 (P = 0.002); I² = 70%								
Test for overall effect: Z = 0.67 (P = 0.51)								
Test for subgroup differences: Not applicable								

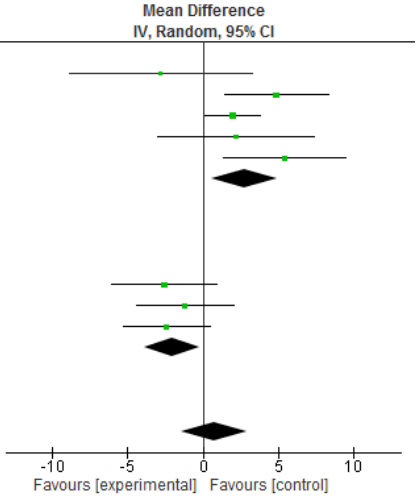


Footnotes

(1) Collins reported number of drinks per month, therefore the reported results were divided by 4 for these analyses.

3.2 Mean difference in number of drinks per week, baseline to 6 months: subgroup analysis students vs non-students

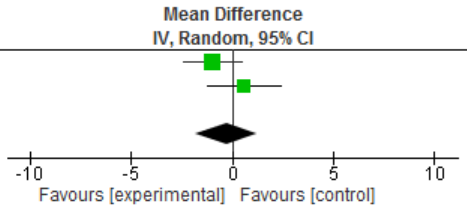
Study or Subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
3.4.1 Students								
Collins 2014	-10.14	34.5	251	-7.35	34.11	242	7.9%	-2.79 [-8.85, 3.27]
Doumas 2011	2.96	9.63	81	-1.91	10.32	54	13.1%	4.87 [1.41, 8.33]
LaBrie 2013	-0.8	9.25	187	-2.8	8.96	187	17.0%	2.00 [0.15, 3.85]
Norman 2018	-9.35	36.82	369	-11.55	35.29	369	9.3%	2.20 [-3.00, 7.40]
Walters 2009	-2.2	11.97	67	-7.62	12.55	73	11.7%	5.42 [1.36, 9.48]
Subtotal (95% CI)			**955**			**925**	**58.9%**	**2.79 [0.60, 4.98]**
Heterogeneity: Tau² = 2.54; Chi² = 6.97, df = 4 (P = 0.14); I² = 43%								
Test for overall effect: Z = 2.50 (P = 0.01)								
3.4.2 Non-students								
Bos 2018	-12.37	14.54	146	-9.81	15.58	142	13.0%	-2.56 [-6.04, 0.92]
Brendryen 2017	-3.6	7.01	43	-2.4	8.29	43	13.6%	-1.20 [-4.44, 2.04]
Cunningham 2009	-2.8	10.05	92	-0.4	10.2	93	14.4%	-2.40 [-5.32, 0.52]
Subtotal (95% CI)			**281**			**278**	**41.1%**	**-2.06 [-3.90, -0.22]**
Heterogeneity: Tau² = 0.00; Chi² = 0.40, df = 2 (P = 0.82); I² = 0%								
Test for overall effect: Z = 2.19 (P = 0.03)								
Total (95% CI)			**1236**			**1203**	**100.0%**	**0.75 [-1.46, 2.96]**
Heterogeneity: Tau² = 6.62; Chi² = 23.16, df = 7 (P = 0.002); I² = 70%								
Test for overall effect: Z = 0.67 (P = 0.51)								
Test for subgroup differences: Chi² = 11.03, df = 1 (P = 0.0009), I² = 90.9%								



3.3 Mean difference in number of drinks per week, baseline to 12 months

Study or Subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
Collins 2014 (1)	-2.78	8.5	251	-1.8175	8.28	242	56.3%	-0.96 [-2.44, 0.52]
LaBrie 2013	-1.8	9.25	187	-2.4	8.87	187	43.7%	0.60 [-1.24, 2.44]
Total (95% CI)			**438**			**429**	**100.0%**	**-0.28 [-1.80, 1.24]**

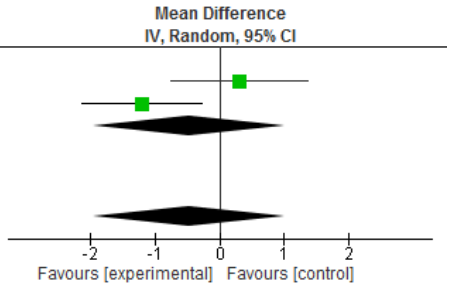
Heterogeneity: Tau² = 0.50; Chi² = 1.68, df = 1 (P = 0.19); I² = 41%
Test for overall effect: Z = 0.36 (P = 0.72)



Footnotes
(1) Collins reported number of drinks per month, therefore the reported results were divided by 4 for these analyses.

3.4 Mean difference in days drinking per week, baseline to 6 months: sensitivity analysis by digital platform

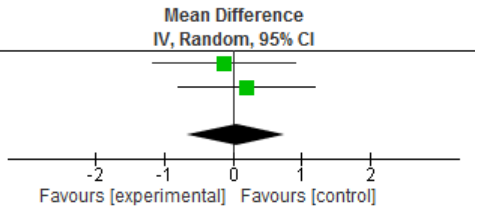
Study or Subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
3.3.1 Internet-based interventions								
Collins 2014	-0.84	5.94	251	-1.15	5.97	242	48.6%	0.31 [-0.74, 1.36]
LaBrie 2013 (1)	-1.5	4.32	187	-0.3	4.8	187	51.4%	-1.20 [-2.13, -0.27]
Subtotal (95% CI)			**438**			**429**	**100.0%**	**-0.47 [-1.95, 1.01]**
Heterogeneity: Tau² = 0.88; Chi² = 4.46, df = 1 (P = 0.03); I² = 78%								
Test for overall effect: Z = 0.62 (P = 0.54)								
Total (95% CI)			**438**			**429**	**100.0%**	**-0.47 [-1.95, 1.01]**
Heterogeneity: Tau² = 0.88; Chi² = 4.46, df = 1 (P = 0.03); I² = 78%								
Test for overall effect: Z = 0.62 (P = 0.54)								
Test for subgroup differences: Not applicable								



Footnotes
(1) LaBrie used a scale from 1 (I did not drink at all) to 7 (I drank every day).

3.5 Mean difference in days drinking per week, baseline to 12 months

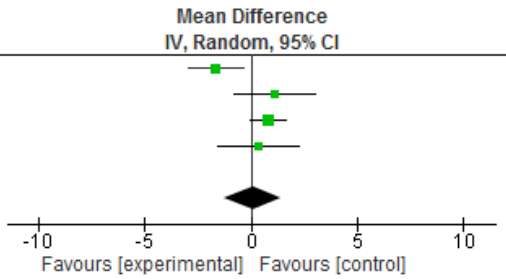
Study or Subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
Collins 2014	-1.05	5.8	251	-0.92	5.94	242	47.4%	-0.13 [-1.17, 0.91]
LaBrie 2013 (1)	-0.5	4.91	187	-0.7	4.8	187	52.6%	0.20 [-0.78, 1.18]
Total (95% CI)			**438**			**429**	**100.0%**	**0.04 [-0.67, 0.76]**
Heterogeneity: Tau² = 0.00; Chi² = 0.20, df = 1 (P = 0.65); I² = 0%								
Test for overall effect: Z = 0.12 (P = 0.90)								



Footnotes
(1) LaBrie used a scale from 1 (I did not drink at all) to 7 (I drank every day).

3.6 Mean difference in number of alcohol-related problems past 30 days[a], baseline to 6 months

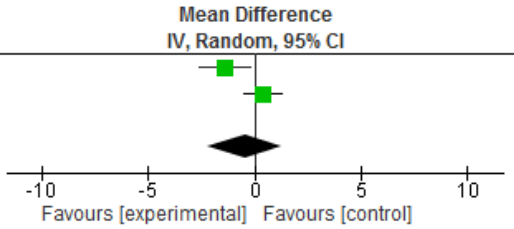
Study or Subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
Collins 2014	-1.81	6.92	251	-0.16	7.67	242	27.2%	-1.65 [-2.94, -0.36]
Doumas 2011	0.58	4.98	81	-0.53	6.03	54	20.6%	1.11 [-0.83, 3.05]
LaBrie 2013	-0.8	3.76	187	-1.6	4.75	187	31.6%	0.80 [-0.07, 1.67]
Walters 2009	-2.27	5.47	73	-2.61	6.18	67	20.6%	0.34 [-1.60, 2.28]
Total (95% CI)			**592**			**550**	**100.0%**	**0.10 [-1.24, 1.44]**
Heterogeneity: Tau² = 1.28; Chi² = 10.59, df = 3 (P = 0.01); I² = 72%								
Test for overall effect: Z = 0.15 (P = 0.88)								



3.7 Mean difference in number of alcohol-related problems past 30 days, baseline to 12 months

Study or Subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
Collins 2014	-2.07	6.59	251	-0.69	6.87	242	47.5%	-1.38 [-2.57, -0.19]
LaBrie 2013	-1.1	4.12	187	-1.5	4.68	187	52.5%	0.40 [-0.49, 1.29]
Total (95% CI)			**438**			**429**	**100.0%**	**-0.45 [-2.19, 1.30]**

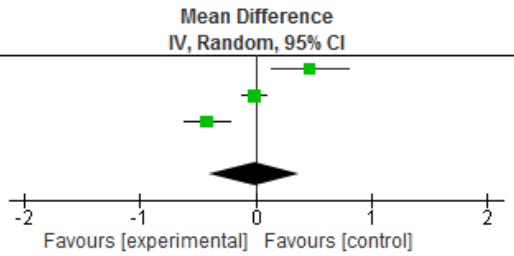
Heterogeneity: Tau² = 1.30; Chi² = 5.50, df = 1 (P = 0.02); I² = 82%
Test for overall effect: Z = 0.50 (P = 0.62)



3.8 Mean difference in number of days binge drinking past 7 days, baseline to 6 months

Study or Subgroup	Experimental Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
Doumas 2011 (1)	0.555	1.03	81	0.085	0.93	54	29.4%	0.47 [0.14, 0.80]
Norman 2018 (2)	-0.19	0.76	369	-0.1775	0.72	369	36.5%	-0.01 [-0.12, 0.09]
Suffoletto 2015 (3)	-0.3	1.06	384	0.125	1.2	196	34.2%	-0.42 [-0.62, -0.23]
Total (95% CI)			**834**			**619**	**100.0%**	**-0.01 [-0.40, 0.38]**

Heterogeneity: Tau² = 0.10; Chi² = 23.37, df = 2 (P < 0.00001); I² = 91%
Test for overall effect: Z = 0.06 (P = 0.95)



Footnotes
(1) Results were reported per month, therefore have been divided by 4.
(2) Results were reported per month, therefore have been divided by 4.
(3) Results were reported per month, therefore have been divided by 4.

Appendix K – Excluded studies

Public health studies

Study	Reason for exclusion
Agyapong Vincent I. O, McLoughlin Declan M, and Farren Conor K (2013) Six-months outcomes of a randomised trial of supportive text messaging for depression and comorbid alcohol use disorder. Journal of affective disorders 151(1), 100-4	- No relevant outcomes reported - Population was of people with alcohol use disorder co-morbid with depression who had just been discharged from an in-patient dual diagnosis treatment programme.
Alfonso Jacqueline, Hall Thomas V, and Dunn Michael E (2013) Feedback-based alcohol interventions for mandated students: an effectiveness study of three modalities. Clinical psychology & psychotherapy 20(5), 411-23	- No relevant outcomes reported
Andersson C, Gajecki M, Ojehagen A, and Berman A H (2017) Automated telephone interventions for problematic alcohol use in clinical and population samples: a randomized controlled trial. BMC Research Notes 10(1), 624	- No relevant outcomes reported
Araki Ikuno, Hashimoto Hideki, Kono Keiko, Matsuki Hideaki, and Yano Eiji (2006) Controlled trial of worksite health education through face-to-face counseling vs. e-mail on drinking behavior modification. Journal of occupational health 48(4), 239-45	- <6-month follow-up (2 months)
Arnaud Nicolas, Baldus Christiane, Elgan Tobias H, De Paepe , Nina , Tonnesen Hanne, Csemy Ladislav, and Thomasius Rainer (2016) Effectiveness of a Web-Based Screening and Fully Automated Brief Motivational Intervention for Adolescent Substance Use: A Randomized Controlled Trial. Journal of medical Internet research 18(5), e103	- <6-month follow-up (3 months)
Arnaud Nicolas, Baldus Christiane, Elgan Tobias H, Tonnesen Hanne, De Paepe , Nina , Csemy Ladislav, and Thomasius Rainer (2015) Moderators of outcome in a web-based substance use intervention for adolescents. Sucht: Zeitschrift fur Wissenschaft und Praxis 61(6), 377-387	- <6-month follow-up (3 months)
Bae Sangwon, Ferreira Denzil, Suffoletto Brian, Puyana Juan C, Kurtz Ryan, Chung Tammy, and Dey Anind K (2017) Detecting Drinking Episodes in Young Adults Using Smartphone-	- <6-month follow-up (36 days) - No relevant intervention

Study	Reason for exclusion
based Sensors. Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. 1(2), 1-36	
Bannink Rienke, Broeren Suzanne, Joosten-van Zwanenburg, Evelien , van As , Els , van de Looij-Jansen , Petra , and Raat Hein (2014) Effectiveness of a Web-based tailored intervention (E-health4Uth) and consultation to promote adolescents' health: randomized controlled trial. Journal of medical Internet research 16(5), e143	- <6-month follow-up (4 months)
Bannink Rienke, Joosten-van Zwanenburg, Evelien , van de Looij-Jansen , Petra , van As , Els , and Raat Hein (2012) Evaluation of computer-tailored health education ('E-health4Uth') combined with personal counselling ('E-health4Uth + counselling') on adolescents' behaviours and mental health status: design of a three-armed cluster randomised controlled trial. BMC public health 12, 1083	- <6-month follow-up (4 months)
Baumann S, Gaertner B, Haberecht K, Meyer C, Rumpf H J, John U, and Freyer-Adam J (2017) Does impaired mental health interfere with the outcome of brief alcohol intervention at general hospitals?. Journal of Consulting and Clinical Psychology 85(6), 562-573	- No relevant outcomes reported.
Baumann S, Gaertner B, Haberecht K, Bischof G, John U, and Freyer-Adam J (2017) Who benefits from computer-based brief alcohol intervention? Day-to-day drinking patterns as a moderator of intervention efficacy. Drug and Alcohol Dependence 175, 119-126	- Data not extractable.
Baumann Sophie, Gaertner Beate, Haberecht Katja, Bischof Gallus, John Ulrich, and Freyer-Adam Jennis (2018) How alcohol use problem severity affects the outcome of brief intervention delivered in-person versus through computer-generated feedback letters. Drug and Alcohol Dependence 183, 82-88	- Not able to extract data.
Bendtsen Preben, Bendtsen Marcus, Karlsson Nadine, White Ian R, and McCambridge Jim (2015) Online Alcohol Assessment and Feedback for Hazardous and Harmful Drinkers: Findings From the AMADEUS-2 Randomized Controlled Trial of Routine Practice in Swedish Universities. Journal of medical Internet research 17(7), e170	- <6-month follow-up (2 months)

Study	Reason for exclusion
Bernstein M H, Stein L A. R, Neighbors C, Suffoletto B, Carey K B, Ferszt G, Caron N, and Wood M D (2018) A text message intervention to reduce 21st birthday alcohol consumption: Evaluation of a two-group randomized controlled trial. Psychology of Addictive Behaviors 32(2), 149-161	- <6-month follow-up (<1 week) - No relevant outcomes reported
Bertholet N, Cunningham J A, Faouzi M, Gaume J, Gmel G, Burnand B, and Daeppen J B (2015) Internet-based brief intervention for young men with unhealthy alcohol use: a randomized controlled trial in a general population sample. Addiction (Abingdon, and England) 110(11), 1735-1743	- Only includes low-risk drinkers.
Bertholet Nicolas, Studer Joseph, Cunningham John A, Gmel Gerhard, Burnand Bernard, and Daeppen Jean-Bernard (2018) Four-year follow-up of an internet-based brief intervention for unhealthy alcohol use in young men. Addiction (Abingdon, and England) 113(8), 1517-1521	- No relevant outcomes reported.
Bewick B M (2008) The effectiveness of web-based interventions designed to decrease alcohol consumption: a systematic review. Preventive medicine 47(1), 17-26	- Does not give detail on included studies' follow-up time.
Bewick Bridgette M, Trusler Karen, Mulhern Brendan, Barkham Michael, Hill Andrew J (2008) The feasibility and effectiveness of a web-based personalised feedback and social norms alcohol intervention in UK university students: a randomised control trial. Addictive behaviors. 33(9), 1192-8	- <6 month follow-up (3 months) - Majority of drinkers were drinking > 35 units a week
Bhochhibhoya A, Hayes L, Branscum P, and Taylor L (2015) The use of the internet for prevention of binge drinking among the college population: A systematic review of evidence. Alcohol and Alcoholism 50(5), 526-535	- Reference list searched for relevant studies
Bingham C Raymond, Barretto Andrea Ippel, Walton Maureen A, Bryant Christopher M, Shope Jean T, and Raghunathan Trivellore E (2010) Efficacy of a Web-based, tailored, alcohol prevention/intervention program for college students: Initial findings. Journal of American College Health 58(4), 349-356	- <6 month follow-up (9 weeks)

Study	Reason for exclusion
Bischof G, Grothues J M, Reinhardt S, Meyer C, John U, and Rumpf H J (2008) Evaluation of a telephone-based stepped care intervention for alcohol-related disorders: A randomized controlled trial. Drug and Alcohol Dependence 93(3), 244-251	- No relevant interventions (both arms had significant proportion of intervention delivered by people) - Only included people drinking > 35 units a week
Black Nicola, Mullan Barbara, and Sharpe Louise (2016) Computer-delivered interventions for reducing alcohol consumption: meta-analysis and meta-regression using behaviour change techniques and theory. Health psychology review 10(3), 341-57	- No relevant outcomes reported.
Blankers Matthijs, Koeter Maarten W. J, and Schippers Gerard M (2011) Internet therapy versus internet self-help versus no treatment for problematic alcohol use: A randomized controlled trial. Journal of consulting and clinical psychology 79(3), 330-41	- Mean baseline drinking > 35 units a week
Braitman Abby L, and Lau-Barraco Cathy (2018) Personalized Boosters After a Computerized Intervention Targeting College Drinking: A Randomized Controlled Trial. Alcoholism, and clinical and experimental research 42(9), 1735-1747	- No relevant interventions (study evaluates booster emails and so participants would have received intervention previously, as excluded by protocol)
Brendryen H, Lund I O, Johansen A B, Riksheim M, Nesvag S, and Duckert F (2014) Balance--a pragmatic randomized controlled trial of an online intensive self-help alcohol intervention. Addiction (Abingdon, and England) 109(2), 218-226	- No relevant interventions (significant proportion of intervention delivered by people)
Byrnes H F, Miller B A, Grube J W, Bourdeau B, Buller D B, Wang-Schweig M, and Woodall W G (2019) Prevention of alcohol use in older teens: A randomized trial of an online family prevention program. Psychology of Addictive Behaviors 33(1), 1-14	- Not a relevant study design
David, Epton Tracy, Norman Paul, Sheeran Paschal, Harris Peter R, Webb Thomas L, Julious Steven A, Brennan Alan, Thomas Chloe, Petroczi Andrea, Naughton Declan, and Shah Iltaf (2015) A theory-based online health behaviour intervention for new university students (U@Uni:LifeGuide): results from a repeat randomized controlled trial. Trials 16, 555	- Not a relevant population *Mean alcohol consumption too low*

Study	Reason for exclusion
Carey Kate B, Scott-Sheldon Lori A. J, Elliott Jennifer C, Bolles Jamie R, and Carey Michael P (2009) Computer-delivered interventions to reduce college student drinking: a meta-analysis. Addiction (Abingdon, and England) 104(11), 1807-19	- <6-month follow-up (<6 weeks)
Carey Kate B, Carey Michael P, Henson James M, Maisto Stephen A, and DeMartini Kelly S (2011) Brief alcohol interventions for mandated college students: comparison of face-to-face counseling and computer-delivered interventions. Addiction (Abingdon, and England) 106(3), 528-37	- Unable to pool data
Carey Kate B, Scott-Sheldon Lori A. J, Elliott Jennifer C, Garey Lorra, and Carey Michael P (2012) Face-to-face versus computer-delivered alcohol interventions for college drinkers: a meta-analytic review, 1998 to 2010. Clinical psychology review 32(8), 690-703	- Unclear follow-up times
Carey Kate B, Walsh Jennifer L, Merrill Jennifer E, Lust Sarah A, Reid Allecia E, Scott-Sheldon Lori A. J, Kalichman Seth C, and Carey Michael P (2018) Using e-mail boosters to maintain change after brief alcohol interventions for mandated college students: A randomized controlled trial. Journal of consulting and clinical psychology 86(9), 787-798	- No relevant interventions
Chebli Jaymee-Lee, Blaszczynski Alexander, and Gainsbury Sally M (2016) Internet-Based Interventions for Addictive Behaviours: A Systematic Review. Journal of gambling studies 32(4), 1279-1304	- Reference list searched for relevant studies
Choo E K, Ranney M L, Aggarwal N, and Boudreaux E D (2012) A systematic review of emergency department technology-based behavioral health interventions. Academic Emergency Medicine 19(3), 318-328	- No evidence to extract.

Study	Reason for exclusion
Cole Hayley A, Prassel Hannah B, and Carlson Charles R (2018) A meta-analysis of computer-delivered drinking interventions for college students: A comprehensive review of studies from 2010 to 2016. Journal of Studies on Alcohol and Drugs 79(5), 686-696	- Unclear follow-up times
Covolo L, Ceretti E, Moneda M, Castaldi S, and Gelatti U (2017) Does evidence support the use of mobile phone apps as a driver for promoting healthy lifestyles from a public health perspective? A systematic review of Randomized Control Trials. Patient education and counseling 100(12), 2231-2243	- No relevant interventions
Crane David, Garnett Claire, Michie Susan, West Robert, and Brown Jamie (2018) Publisher Correction: A smartphone app to reduce excessive alcohol consumption: Identifying the effectiveness of intervention components in a factorial randomised control trial. Scientific reports 8(1), 6866	- <6-month follow-up (<28 days)
Crane David, Garnett Claire, Michie Susan, West Robert, and Brown Jamie (2018) A smartphone app to reduce excessive alcohol consumption: Identifying the effectiveness of intervention components in a factorial randomised control trial. Scientific reports 8(1), 4384	- <6-month follow-up (<28 days)
Crombie Iain K, Irvine Linda, Williams Brian, Sniehotta Falko F, Petrie Dennis J, Jones Claire, Norrie John, Evans Josie M. M, Emslie Carol, Rice Peter M, Slane Peter W, Humphris Gerry, Ricketts Ian W, Melson Ambrose J, Donnan Peter T, McKenzie Andrew, Huang Li, and Achison Marcus (2018) Text message intervention to reduce frequency of binge drinking among disadvantaged men: the TRAM RCT. Addiction 113, 1609-1618	- Publication has no further outcomes to report from study, as reported in Crombie 2018 included in this review.
Cucciare M A, Weingardt K R, Ghaus S, Boden M T, and Frayne S M (2013) A randomized controlled trial of a web-delivered brief alcohol intervention in veterans affairs primary care. Journal of Studies on Alcohol and Drugs 74(3), 428-436	- No relevant interventions (significant proportion of intervention delivered by people)

Study	Reason for exclusion
Cunningham J A, Wild T C, Cordingley J, van Mierlo , T , and Humphreys K (2010) Twelve-month follow-up results from a randomized controlled trial of a brief personalized feedback intervention for problem drinkers. Alcohol and Alcoholism 45(3), 258-262	- No relevant outcomes
Cunningham John Alastair (2012) Comparison of two internet-based interventions for problem drinkers: randomized controlled trial. Journal of medical Internet research 14(4), e107	- No relevant interventions
Danielsson Anna-Karin, Eriksson Anna-Karin, and Allebeck Peter (2014) Technology-based support via telephone or web: a systematic review of the effects on smoking, alcohol use and gambling. Addictive behaviors 39(12), 1846-68	- No relevant interventions
Davies Emma L, Lonsdale Adam J, Hennelly Sarah E, Winstock Adam R, and Foxcroft David R (2017) Personalized digital interventions showed no impact on risky drinking in young adults: A pilot randomized controlled trial. Alcohol and Alcoholism 52(6), 671-676	- <6-month follow-up (4-weeks)
Deady Mark, Mills Katherine L, Teesson Maree, and Kay-Lambkin Frances (2016) An Online Intervention for Co-Occurring Depression and Problematic Alcohol Use in Young People: Primary Outcomes From a Randomized Controlled Trial. Journal of medical Internet research 18(3), e71	- Mean AUDIT score suggests population was alcohol-dependent
Dedert Eric A, McDuffie Jennifer R, Stein Roy, McNiel J Murray, Kosinski Andrzej S, Freiermuth Caroline E, Hemminger Adam, Williams John W, and Jr (2015) Electronic Interventions for Alcohol Misuse and Alcohol Use Disorders: A Systematic Review. Annals of internal medicine 163(3), 205-14	- Unclear follow-up times
Donovan E, Wood M, Frayjo K, Black R A, and Surette D A (2012) A randomized, controlled trial to test the efficacy of an online, parent-based intervention for reducing the risks associated with college-student alcohol use. Addictive Behaviors 37(1), 25-35	- No relevant outcomes reported.

Study	Reason for exclusion
Doumas Diana M, Esp Susan, Turrisi Rob, Hausheer Robin, and Cuffee Courtney (2014) A test of the efficacy of a brief, web-based personalized feedback intervention to reduce drinking among 9th grade students. Addictive behaviors 39(1), 231-8	- <6-month follow-up (3 months) - High proportion of never drinkers
Duroy D, Boutron I, Baron G, Ravaud P, Estellat C, and Lejoyeux M (2016) Impact of a computer-assisted Screening, Brief Intervention and Referral to Treatment on reducing alcohol consumption among patients with hazardous drinking disorder in hospital emergency departments. The randomized BREVALCO trial. Drug and Alcohol Dependence 165, 236-244	- <6-month follow-up (3 months)
Elison Sarah, Davies Glyn, and Ward Jonathan (2015) An outcomes evaluation of computerized treatment for problem drinking using Breaking Free Online. Alcoholism Treatment Quarterly 33(2), 185-196	- <6-month follow-up (3 months) - No relevant outcomes reported.
Elison S, Jones A, Ward J, Davies G, and Dugdale S (2017) Examining effectiveness of tailorable computer-assisted therapy programmes for substance misuse: Programme usage and clinical outcomes data from Breaking Free Online. Addictive Behaviors 74, 140-147	- <6-month follow-up (mean 8 weeks) - Irrelevant study design (before and after)
Ekman D S, Andersson A, Nilsen P, Ståhlbrandt H, Johansson A L, and Bendtsen P (2011) Electronic screening and brief intervention for risky drinking in Swedish university students--a randomized controlled trial. Addict Behav 36(6), 654-9	- No relevant outcomes reported.
Garnett Claire, Crane David, Brown Jamie, Kaner Eileen, Beyer Fiona, Muirhead Colin, Hickman Matthew, Redmore James, de Vocht , Frank , Beard Emma, and Michie Susan (2018) Reported Theory Use by Digital Interventions for Hazardous and Harmful Alcohol Consumption, and Association With Effectiveness: Meta-Regression. Journal of medical Internet research 20(2), e69	- No relevant outcomes reported. - Unclear follow-up times
Fazzino Tera L, Rose Gail L, and Helzer John E (2016) An experimental test of assessment reactivity within a web-based brief alcohol intervention study for college students. Addictive Behaviors 52, 66-74	- <6-month follow-up (1 month)

Study	Reason for exclusion
Flutura Simon, Seiderer Andreas, Aslan Ilhan, Dang Chi-Tai, Schwarz Raphael, Schiller Dominik, Andr Elisabeth, and #233 (2018) DrinkWatch: A Mobile Wellbeing Application Based on Interactive and Cooperative Machine Learning. Proceedings of the 2018 International Conference on Digital Health , 65-74	- Irrelevant study design
Force Community Preventive Services Task (2016) Alcohol electronic screening and brief intervention: Recommendation of the Community Preventive Services Task Force. American Journal of Preventive Medicine 51(5), 812-813	- No evidence to extract.
Fowler L A, Holt S L, and Joshi D (2016) Mobile technology-based interventions for adult users of alcohol: A systematic review of the literature. Addictive Behaviors 62, 25-34	- No studies with 6-month follow up.
Freyer-Adam Jennis, Baumann Sophie, Haberecht Katja, Tobschall Stefanie, Bischof Gallus, John Ulrich, and Gaertner Beate (2018) In-person alcohol counseling versus computer-generated feedback: Results from a randomized controlled trial. Health Psychology 37(1), 70-80	- No relevant outcomes reported.
Gajecki M, Berman A H, Sinadinovic K, Rosendahl I, and Andersson C (2014) Mobile phone brief intervention applications for risky alcohol use among university students: a randomized controlled study. Addiction science & clinical practice 9, 11	- <6 month follow-up (7 weeks)
Gajecki M, Andersson C, Rosendahl I, Sinadinovic K, Fredriksson M, and Berman A H (2017) Skills Training via Smartphone App for University Students with Excessive Alcohol Consumption: a Randomized Controlled Trial. International Journal of Behavioral Medicine 24(5), 778-788	- <6 month follow-up (18 weeks)
Ganz T, Braun M, Laging M, Schermelleh-Engel K, Michalak J, and Heidenreich T (2018) Effects of a stand-alone web-based electronic	- No relevant outcomes reported.

Study	Reason for exclusion
screening and brief intervention targeting alcohol use in university students of legal drinking age: A randomized controlled trial. Addictive Behaviors 77, 81-88	
Garnett Claire, Perski Olga, Tombor Ildiko, West Robert, Michie Susan, and Brown Jamie (2018) Predictors of Engagement, Response to Follow Up, and Extent of Alcohol Reduction in Users of a Smartphone App (Drink Less): Secondary Analysis of a Factorial Randomized Controlled Trial. JMIR mHealth and uHealth 6(12), e11175	- <6-month follow-up (1 month)
Garnett Claire V, Crane David, Brown Jamie, Kaner Eileen F. S, Beyer Fiona R, Muirhead Colin R, Hickman Matthew, Beard Emma, Redmore James, de Vocht , Frank , and Michie Susan (2018) Behavior Change Techniques Used in Digital Behavior Change Interventions to Reduce Excessive Alcohol Consumption: A Meta-regression. Annals of behavioral medicine : a publication of the Society of Behavioral Medicine 52(6), 530-543	- No relevant outcomes reported.
Garnett Claire, Crane David, Brown Jamie, Kaner Eileen, Beyer Fiona, Muirhead Colin, Hickman Matthew, Redmore James, de Vocht , Frank , Beard Emma, and Michie Susan (2018) Reported Theory Use by Digital Interventions for Hazardous and Harmful Alcohol Consumption, and Association With Effectiveness: Meta-Regression. Journal of medical Internet research 20(2), e69	- No relevant outcomes reported.
Geisner I M, Varvil-Weld L, Mittmann A J, Mallett K, and Turrisi R (2015) Brief web-based intervention for college students with comorbid risky alcohol use and depressed mood: Does it work and for whom?. Addictive Behaviors 42, 36-43	- <6-month follow-up (1 month)
Ghita Alexandra, and Gutierrez-Maldonado Jose (2018) Applications of virtual reality in individuals with alcohol misuse: A systematic review. Addictive behaviors 81, 1-11	- Reference list searched for relevant studies
Gilbertson Rebecca J, Norton Tina R, Beery Susan H, and Lee Kassandra R (2018) Web-Based Alcohol Intervention in First-Year College Students: Efficacy of Full-Program	- <6-month follow-up

Study	Reason for exclusion
Administration Prior to Second Semester. Substance Use & Misuse 53(6), 1021-1029	
Giroux Isabelle, Goulet Annie, Mercier Jonathan, Jacques Christian, and Bouchard Stephane (2017) Online and Mobile Interventions for Problem Gambling, Alcohol, and Drugs: A Systematic Review. Frontiers in psychology 8, 954	- Reference list searched for relevant studies
Guillemont Juliette, Cogordan Chloe, Nalpas Bertrand, Nguyen-Thanh Viet, Richard Jean-Baptiste, and Arwidson Pierre (2017) Effectiveness of a web-based intervention to reduce alcohol consumption among French hazardous drinkers: a randomized controlled trial. Health education research 32(4), 332-342	- <6-month follow-up (6 weeks) - Mean AUDIT score suggests dependency
Gustafson David H, McTavish Fiona M, Chih Ming-Yuan, Atwood Amy K, Johnson Roberta A, Boyle Michael G, Levy Michael S, Driscoll Hilary, Chisholm Steven M, Dillenburg Lisa, Isham Andrew, and Shah Dhavan (2014) A smartphone application to support recovery from alcoholism: a randomized clinical trial. JAMA psychiatry 71(5), 566-72	- Mean AUDIT score suggests dependency
Hamilton Fiona L, Hornby Jo, Sheringham Jessica, Linke Stuart, Ashton Charlotte, Moore Kevin, Stevenson Fiona, and Murray Elizabeth (2017) DIAMOND (DIgital Alcohol Management ON Demand): a mixed methods feasibility RCT and embedded process evaluation of a digital health intervention to reduce hazardous and harmful alcohol use. Pilot and feasibility studies 3, 34	- <6-month follow-up (3 months) - No relevant interventions
Hamilton Fiona L, Hornby Jo, Sheringham Jessica, Linke Stuart, Ashton Charlotte, Moore Kevin, Stevenson Fiona, and Murray Elizabeth (2018) DIAMOND (DIgital Alcohol Management ON Demand): a feasibility RCT and embedded process evaluation of a digital health intervention to reduce hazardous and harmful alcohol use recruiting in hospital emergency departments and online. Pilot and feasibility studies 4, 114	- <6-month follow-up (3 months) - No relevant interventions

Study	Reason for exclusion
Han Benjamin H, Masukawa Kristin, Rosenbloom David, Kuerbis Alexis, Helmuth Eric, Liao Diana H, and Moore Alison A (2018) Use of web-based screening and brief intervention for unhealthy alcohol use by older adults. Journal of Substance Abuse Treatment 86, 70-77	- Irrelevant study design (before and after)
Hansen A B, Becker U, Nielsen A S, Grönbæk M, Tolstrup J S, and Thygesen L C (2012) Internet-based brief personalized feedback intervention in a non-treatment-seeking population of adult heavy drinkers: a randomized controlled trial. J Med Internet Res 14(4), e98	- Data not extractable.
Hasin D S, Aharonovich E, and Greenstein E (2014) HealthCall for the smartphone: technology enhancement of brief intervention in HIV alcohol dependent patients. Addiction science & clinical practice 9, 5	- Only includes alcohol-dependent people (as per DSM-IV)
Haskins Brianna L, Davis-Martin Rachel, Abar Beau, Baumann Brigitte M, Harralson Tina, and Boudreaux Edwin D (2017) Health Evaluation and Referral Assistant: A Randomized Controlled Trial of a Web-Based Screening, Brief Intervention, and Referral to Treatment System to Reduce Risky Alcohol Use Among Emergency Department Patients. Journal of medical Internet research 19(5), e119	- <6-month follow-up (3 months)
Haug S, Castro R P, Kowatsch T, Filler A, Dey M, and Schaub M P (2017) Efficacy of a Web- and Text Messaging-Based Intervention to Reduce Problem Drinking in Adolescents: Results of a Cluster-Randomized Controlled Trial. Journal of Consulting and Clinical Psychology 85(2), 147-159	- No relevant interventions
Haug Severin, Paz Castro, Raquel , Meyer Christian, Filler Andreas, Kowatsch Tobias, and Schaub Michael P (2017) A Mobile Phone-Based Life Skills Training Program for Substance Use Prevention Among Adolescents: Pre-Post Study on the Acceptance and Potential	- Irrelevant study design (before and after)

Study	Reason for exclusion
Effectiveness of the Program, Ready4life. JMIR mHealth and uHealth 5(10), e143	
Hedman Amy S (2007) Effects of personalized feedback and tailored health communication on alcohol consumption, alcohol-related behaviors, and attitude among binge drinking college students. Dissertation Abstracts International Section A: Humanities and Social Sciences 68(3-A), 891	- Unable to retrieve reference
Helzer John E, Rose Gail L, Badger Gary J, Searles John S, Thomas Colleen S, Lindberg Sarah A, and Guth Sarah (2008) Using interactive voice response to enhance brief alcohol intervention in primary care settings. Journal of studies on alcohol and drugs 69(2), 251-8	- No relevant interventions - High proportion of alcohol dependency
Hendershot Christian S, Otto Jacqueline M, Collins Susan E, Liang Tiebing, and Wall Tamara L (2010) Evaluation of a brief web-based genetic feedback intervention for reducing alcohol-related health risks associated with ALDH2. Annals of behavioral medicine : a publication of the Society of Behavioral Medicine 40(1), 77-88	- No relevant outcomes reported.
Hester Reid K, Squires Daniel D, and Delaney Harold D (2005) The Drinker's Check-up: 12-month outcomes of a controlled clinical trial of a stand-alone software program for problem drinkers. Journal of substance abuse treatment 28(2), 159-69	- Comparator in study does not match that specified in protocol
Hester R K, Delaney H D, and Campbell W (2011) ModerateDrinking.com and moderation management: Outcomes of a randomized clinical trial with non-dependent problem drinkers. Journal of Consulting and Clinical Psychology 79(2), 215-224	- No relevant interventions
Hester R K, and Delaney H D (1997) Behavioral Self-Control Program for Windows: results of a	- Study too old

Study	Reason for exclusion
controlled clinical trial. J Consult Clin Psychol 65(4), 686-93	
Hides L, Quinn C, Cockshaw W, Stoyanov S, Zelenko O, Johnson D, Tjondronegoro D, Quek L H, and Kavanagh D J (2018) Efficacy and outcomes of a mobile app targeting alcohol use in young people. Addictive Behaviors 77, 89-95	- Irrelevant study design (before and after)
Hu Emily Marie (2018) The effectiveness of text coaching on substance use treatment outcomes in adolescence. Dissertation Abstracts International: Section B: The Sciences and Engineering 79(1-B(E)), No-Specified	- <6-month follow-up (2 months)
Inc Hayes (2012) Screening, Brief Intervention, and Referral to Treatment (SBIRT) using remote interventions for alcohol misuse. Centre for Reviews and Dissemination	- Unable to retrieve reference
Ingersoll K, Frederick C, MacDonnell K, Ritterband L, Lord H, Jones B, and Truwit L (2018) A Pilot RCT of an Internet Intervention to Reduce the Risk of Alcohol-Exposed Pregnancy. Alcoholism: Clinical and Experimental Research 42(6), 1132-1144	- No relevant outcomes reported.
Ito Chieko, Yuzuriha Takefumi, Noda Tatsuya, Ojima Toshiyuki, Hiro Hisanori, and Higuchi Susumu (2015) Brief intervention in the workplace for heavy drinkers: a randomized clinical trial in Japan. Alcohol and alcoholism (Oxford, and Oxfordshire) 50(2), 157-63	- No relevant interventions
Johnson N A, Kypri K, Saunders J B, Saitz R, Attia J, Latter J, McElduff P, Dunlop A, Doran C, Wolfenden L, and McCambridge J (2018) Effect of electronic screening and brief intervention on hazardous or harmful drinking among adults in the hospital outpatient setting: A randomized, double-blind, controlled trial. Drug and Alcohol Dependence 191, 78-85	- No relevant outcomes reported.
Kaner E F. S, Beyer F R, Garnett C, Crane D, Brown J, Muirhead C, Redmore J, O'Donnell A,	- Reference list searched for relevant studies

Study	Reason for exclusion
Newham J J, de Vocht , F , and et al (2017) Personalised digital interventions for reducing hazardous and harmful alcohol consumption in community-dwelling populations. Cochrane Database of Systematic Reviews (9),	
Kazemi Donna M, Borsari Brian, Levine Maureen J, Li Shaoyu, Lamberson Katie A, and Matta Laura A (2017) A Systematic Review of the mHealth Interventions to Prevent Alcohol and Substance Abuse. Journal of Health Communication 22(5), 413-432	- <6-month follow-up (4 months)
Kennedy David P, Hunter Sarah B, Chan Osilla, Karen , Maksabedian Ervant, Golinelli Daniela, and Tucker Joan S (2016) A computer-assisted motivational social network intervention to reduce alcohol, drug and HIV risk behaviors among Housing First residents. Addiction science & clinical practice 11(1), 4	- Data not reported in an extractable format - <6-month follow-up (3 months) - No relevant interventions
Khadjesari Zarnie, Freemantle Nick, Linke Stuart, Hunter Rachael, and Murray Elizabeth (2014) Health on the web: randomised controlled trial of online screening and brief alcohol intervention delivered in a workplace setting. PloS one 9(11), e112553	- <6-month follow-up (3 months) - No relevant interventions (significant proportion of intervention delivered by people)
Kim Ju Young, Wineinger Nathan E, and Steinhubl Steven R (2016) The Influence of Wireless Self-Monitoring Program on the Relationship Between Patient Activation and Health Behaviors, Medication Adherence, and Blood Pressure Levels in Hypertensive Patients: A Substudy of a Randomized Controlled Trial. Journal of medical Internet research 18(6), e116	- No relevant interventions (significant proportion of intervention delivered by people)
Koffarnus Mikhail N, Bickel Warren K, and Kablinger Anita S (2018) Remote Alcohol Monitoring to Facilitate Incentive-Based Treatment for Alcohol Use Disorder: A Randomized Trial. Alcoholism, and clinical and experimental research 42(12), 2423-2431	- <6-month follow-up (21 days) - Only included alcohol-dependent participants (as per DSM-V)

Study	Reason for exclusion
Koski-Jannes Anja, Cunningham John, and Tolonen Kari (2009) Self-assessment of drinking on the Internet--3-, 6- and 12-month follow-ups. Alcohol and alcoholism (Oxford, and Oxfordshire) 44(3), 301-5	- Irrelevant study design (observational)
Kouwenhoven-Pasmooij T A, Djikanovic B, Robroek S J, Helmhout P, Burdorf A, and Hunink M G (2015) Design and baseline characteristics of the PerfectFit study: a multicenter cluster-randomized trial of a lifestyle intervention in employees with increased cardiovascular risk. BMC public health 15, 715	- No relevant outcomes reported. - Participants were not problem drinkers
Kouwenhoven-Pasmooij Tessa A, Robroek Suzan J. W, Kraaijenhagen Roderik A, Helmhout Pieter H, Nieboer Daan, Burdorf Alex, Myriam Hunink, and M G (2018) Effectiveness of the blended-care lifestyle intervention 'PerfectFit': a cluster randomised trial in employees at risk for cardiovascular diseases. BMC public health 18(1), 766	- No relevant outcomes reported. - Participants were not problem drinkers
Kypri Kypros, Saunders John B, Williams Sheila M, McGee Rob O, Langley John D, Cashell-Smith Martine L, and Gallagher Stephen J (2004) Web-based screening and brief intervention for hazardous drinking: a double-blind randomized controlled trial. Addiction (Abingdon, and England) 99(11), 1410-7	- Interventions unclear
Kypri Kypros, Langley John D, Saunders John B, Cashell-Smith Martine L, and Herbison Peter (2008) Randomized controlled trial of web-based alcohol screening and brief intervention in primary care. Archives of internal medicine 168(5), 530-6	- No relevant outcomes reported.
Kypri K, Hallett J, Howat P, McManus A, Maycock B, Bowe S, and Horton N J (2009) Randomized controlled trial of proactive web-based alcohol screening and brief intervention for university students. Archives of Internal Medicine 169(16), 1508-1514	- No relevant outcomes reported.

Study	Reason for exclusion
Lana Alberto, Faya-Ornia Goretti, and Lopez Maria Luisa (2014) Impact of a web-based intervention supplemented with text messages to improve cancer prevention behaviors among adolescents: results from a randomized controlled trial. Preventive medicine 59, 54-9	- No relevant outcomes reported.
Leeman R F, Perez E, Nogueira C, and DeMartini K S (2015) Very-brief, web-based interventions for reducing alcohol use and related problems among college students: A review. Frontiers in Psychiatry 6(SEP), 129	- Reference list searched for relevant studies
Leeman Robert F, DeMartini Kelly S, Gueorguieva Ralitza, Nogueira Christine, Corbin William R, Neighbors Clayton, and O'Malley Stephanie S (2016) Randomized controlled trial of a very brief, multicomponent web-based alcohol intervention for undergraduates with a focus on protective behavioral strategies. Journal of consulting and clinical psychology 84(11), 1008-1015	- Not a relevant population *Mean alcohol consumption too low*
Lewis Melissa A, Patrick Megan E, Litt Dana M, Atkins David C, Kim Theresa, Blayney Jessica A, Norris Jeanette, George William H, and Larimer Mary E (2014) Randomized controlled trial of a web-delivered personalized normative feedback intervention to reduce alcohol-related risky sexual behavior among college students. Journal of consulting and clinical psychology 82(3), 429-40	- Not a relevant population *Mean alcohol consumption too low*
Lovecchio Catherine P, Wyatt Todd M, and DeJong William (2010) Reductions in drinking and alcohol-related harms reported by first-year college students taking an online alcohol education course: a randomized trial. Journal of health communication 15(7), 805-19	- <6-month follow-up (30 days)
McGeary John E, Meadows Sydney P, Amir Nader, and Gibb Brandon E (2014) Computer-delivered, home-based, attentional retraining reduces drinking behavior in heavy drinkers. Psychology of addictive behaviors : journal of	- <6-month follow-up (4 weeks)

Study	Reason for exclusion
the Society of Psychologists in Addictive Behaviors 28(2), 559-62	
Miller Elizabeth Tudor (2001) Preventing alcohol abuse and alcohol-related negative consequences among freshmen college students: Using emerging computer technology to deliver and evaluate the effectiveness of brief intervention efforts. Dissertation Abstracts International: Section B: The Sciences and Engineering 61(8-B), 4417	- Unable to retrieve reference
Miller Mary Beth, Leavens Eleanor L, Meier Ellen, Lombardi Nathaniel, and Leffingwell Thad R (2016) Enhancing the efficacy of computerized feedback interventions for college alcohol misuse: An exploratory randomized trial. Journal of consulting and clinical psychology 84(2), 122-33	- <6-month follow-up (1 month)
Muench F, Van Stolk-Cooke , K , Kuerbis A, Stadler G, Baumel A, Shao S, McKay J R, and Morgenstern J (2017) A randomized controlled pilot trial of different mobile messaging interventions for problem drinking compared to weekly drink tracking. PLoS ONE 12(2), e0167900	- <6-month follow-up (12 weeks)
Neighbors C, Larimer M E, and Lewis M A (2004) Targeting misperceptions of descriptive drinking norms: efficacy of a computer-delivered personalized normative feedback intervention. J Consult Clin Psychol 72(3), 434-47	- No relevant outcomes reported.
Neumann T, Neuner B, Weiss-Gerlach E, Tonnesen H, Gentilello L M, Wernecke K D, Schmidt K, Schroder T, Wauer H, Heinz A, Mann K, Muller J M, Haas N, Kox W J, and Spies C D (2006) The effect of computerized tailored brief advice on at-risk drinking in subcritically injured trauma patients. Journal of Trauma - Injury, and Infection and Critical Care 61(4), 805-814	- Only included dependent drinkers (>35 units/week)

Study	Reason for exclusion
Newton Nicola C, Andrews Gavin, Teesson Maree, and Vogl Laura E (2009) Delivering prevention for alcohol and cannabis using the Internet: a cluster randomised controlled trial. Preventive medicine 48(6), 579-84	- No relevant interventions (significant proportion of intervention delivered by people)
Newton Nicola C, Teesson Maree, Vogl Laura E, and Andrews Gavin (2010) Internet-based prevention for alcohol and cannabis use: final results of the Climate Schools course. Addiction (Abingdon, and England) 105(4), 749-59	- No relevant interventions (significant proportion of intervention delivered by people)
Norman P; Webb TL; Millings A; Pechey L; Does the structure (tunneled vs. free-roam) and content (if-then plans vs. choosing strategies) of a brief online alcohol intervention effect engagement and effectiveness? A randomized controlled trial. 2019. Translational Behavioral Medicine. Jul ibz110.	- No relevant comparator.
O'Rourke L, Humphris G, and Baldacchino A (2016) Electronic communication based interventions for hazardous young drinkers: A systematic review. Neuroscience and Biobehavioral Reviews 68, 880-890	- Reference list searched for relevant studies
Ondersma S J, Svikis D S, Thacker L R, Beatty J R, and Lockhart N (2016) A randomised trial of a computer-delivered screening and brief intervention for postpartum alcohol use. Drug & Alcohol Review 35(6), 710-718	
Osilla Karen Chan, Paddock Susan M, Leininger Thomas J, D'Amico Elizabeth J, Ewing Brett A, and Watkins Katherine E (2015) A pilot study comparing in-person and web-based motivational interviewing among adults with a first-time DUI offense. Addiction science & clinical practice 10, 18	- No relevant interventions (significant proportion of intervention delivered by people) - <6-month follow-up (3 months)
Palfai T P, Zisserson R, and Saitz R (2011) Using personalized feedback to reduce alcohol use among hazardous drinking college students: The moderating effect of alcohol-related negative consequences. Addictive Behaviors 36(5), 539-542	- <6-month follow-up (1 month)

Study	Reason for exclusion
Palmer M, Sutherland J, Barnard S, Wynne A, Rezel E, Doel A, Grigsby-Duffy L, Edwards S, Russell S, Hotopf E, Perel P, and Free C (2018) The effectiveness of smoking cessation, physical activity/diet and alcohol reduction interventions delivered by mobile phones for the prevention of non-communicable diseases: A systematic review of randomised controlled trials. PLoS ONE 13(1), e0189801	- No alcohol-related studies
Parekh S, King D, Boyle F M, and Vandelanotte C (2014) Randomized controlled trial of a computer-tailored multiple health behaviour intervention in general practice: 12-month follow-up results. International Journal of Behavioral Nutrition and Physical Activity 11(1), 41	- Participants were not problem drinkers
Pedersen Eric R, Neighbors Clayton, Atkins David C, Lee Christine M, and Larimer Mary E (2017) Brief online interventions targeting risk and protective factors for increased and problematic alcohol use among American college students studying abroad. Psychology of Addictive Behaviors 31(2), 220-230	- Unclear follow-up time - No relevant interventions (aimed at prevention)
Postel Marloes G, de Haan , Hein A, ter Huurne, Elke D, Becker Eni S, de Jong , and Cor A J (2010) Effectiveness of a web-based intervention for problem drinkers and reasons for dropout: randomized controlled trial. Journal of medical Internet research 12(4), e68	- <6-month follow-up (3 months) - No relevant interventions (significant proportion of intervention delivered by people)
Postel Marloes G, ter Huurne, Elke D, de Haan , Hein A, van der Palen , Job , de Jong , and Cor A J (2015) A 9-month follow-up of a 3-month web-based alcohol treatment program using intensive asynchronous therapeutic support. The American journal of drug and alcohol abuse 41(4), 309-16	- No relevant interventions (significant proportion of intervention delivered by people)
Prosser Tom, Gee Kate Ann, and Jones Fergal (2018) A meta-analysis of effectiveness of E-	- Reference list searched for relevant studies

Study	Reason for exclusion
interventions to reduce alcohol consumption in college and university students. Journal of American college health : J of ACH 66(4), 292-301	
Radtke Theda, Ostergaard Mathias, Cooke Richard, and Scholz Urte (2017) Web-based alcohol intervention: Study of systematic attrition of heavy drinkers. Journal of Medical Internet Research 19(6), 131-142	- No relevant interventions
Reiss Elayne R (2011) Evaluation of an online alcohol education program for first-time-in-college students. Dissertation Abstracts International Section A: Humanities and Social Sciences 71(8-A), 2781	- No relevant interventions (assessed which participant-related factors may be correlated with willingness to complete intervention)
Riper Heleen, Kramer Jeannet, Smit Filip, Conijn Barbara, Schippers Gerard, and Cuijpers Pim (2008) Web-based self-help for problem drinkers: a pragmatic randomized trial. Addiction (Abingdon, and England) 103(2), 218-27	- No follow-up data
Sanchez Zila M, and Sanudo Adriana (2018) Web-based alcohol intervention for nightclub patrons: Opposite effects according to baseline alcohol use disorder classification. Substance abuse 39(3), 361-370	- No relevant outcomes reported.
Rose G L, Badger G J, Skelly J M, MacLean C D, Ferraro T A, and Helzer J E (2017) A randomized controlled trial of brief intervention by interactive voice response. Alcohol and Alcoholism 52(3), 335-343	- Not a relevant population *Mean alcohol consumption too low*
Sharpe S, Kool B, Whittaker R, Lee A C, Reid P, Civil I, Walker M, Thornton V, and Ameratunga S (2018) Effect of a text message intervention to reduce hazardous drinking among injured patients discharged from a trauma ward: a randomized controlled trial. npj Digital Medicine 1(1), 13	- No relevant outcomes reported.
Sinadinovic Kristina, Wennberg Peter, Johansson Magnus, and Berman Anne H (2014)	- Mean AUDIT score suggests dependency

Study	Reason for exclusion
Targeting individuals with problematic alcohol use via Web-based cognitive-behavioral self-help modules, personalized screening feedback or assessment only: a randomized controlled trial. European addiction research 20(6), 305-18	
Strohman Ashleigh Sweet, Braje Sopagna Eap, Alhassoon Omar M, Shuttleworth Sylvie, Van Slyke , Jenna , and Gandy Sharareh (2016) Randomized controlled trial of computerized alcohol intervention for college students: role of class level. The American journal of drug and alcohol abuse 42(1), 15-24	- <6-month follow-up (1 month)
Voogt C V (2013) The effectiveness of a web-based brief alcohol intervention in reducing heavy drinking among adolescents aged 15-20 years with low educational background : a two-arm parallel group cluster randomized controlled trial. BMC public health 13, 694	- Unclear follow-up
Voogt C V, Kuntsche E, Kleinjan M, Poelen E A. P, Lemmers L A. C. J, and Engels R C. M. E (2013) Using ecological momentary assessment in testing the effectiveness of an alcohol intervention: A two-arm parallel group randomized controlled trial. PLoS ONE 8(11), e78436	- <6-month follow-up (4 months)
Voogt C V, Kuntsche E, Kleinjan M, and Engels R C. M. E (2014) The effect of the 'What Do You Drink' web-based brief alcohol intervention on self-efficacy to better understand changes in alcohol use over time: Randomized controlled trial using ecological momentary assessment. Drug and Alcohol Dependence 138(1), 89-97	- No relevant interventions
Voogt Carmen V, Poelen Evelien A. P, Kleinjan Marloes, Lemmers Lex A. C. J, and Engels Rutger C. M. E (2013) The effectiveness of the 'what do you drink' web-based brief alcohol intervention in reducing heavy drinking among students: a two-arm parallel group randomized controlled trial. Alcohol and alcoholism (Oxford, and Oxfordshire) 48(3), 312-21	- <6-month follow-up (5 months)

Study	Reason for exclusion
Wallace Paul, Murray Elizabeth, McCambridge Jim, Khadjesari Zarnie, White Ian R, Thompson Simon G, Kalaitzaki Eleftheria, Godfrey Christine, and Linke Stuart (2011) On-line randomized controlled trial of an internet based psychologically enhanced intervention for people with hazardous alcohol consumption. PloS one 6(3), e14740	- Mean units exceed 30 per week at baseline
Wright Cassandra, Dietze Paul M, Agius Paul A, Kuntsche Emmanuel, Livingston Michael, Black Oliver C, Room Robin, Hellard Margaret, and Lim Megan Sc (2018) Mobile Phone-Based Ecological Momentary Intervention to Reduce Young Adults' Alcohol Use in the Event: A Three-Armed Randomized Controlled Trial. JMIR mHealth and uHealth 6(7), e149	- <6-month follow-up (3 months)
Zill J M, Christalle E, Meyer B, Harter M, and Dirmaier J (2019) The Effectiveness of an Internet Intervention Aimed at Reducing Alcohol Consumption in Adults. Deutsches arzteblatt international 116(8), 127-133	- Not a relevant population *Mean alcohol consumption too high*

Economic studies

Reference	Exclusion reason
Aalbers T, Baars MAE, Rikkert MGMO. Characteristics of effective internet-mediated interventions to change lifestyle in people aged 50 and older: a systematic review. Ageing Res Rev. 2011;10(4):487-97.	Ineligible outcomes
Abrantes AM, Blevins CE, Battle CL, Read JP, Gordon AL, Stein MD. Developing a Fitbit-supported lifestyle physical activity intervention for depressed alcohol dependent women. J Subst Abuse Treat. 2017;80:88-97.	Ineligible outcomes
Adams J. Worth doing badly? Sexual health promotion in primary care. Br J Gen Pract. 2003;53(497):981.	Ineligible study design
Aittasalo M, Rinne M, Pasanen M, Kukkonen-Harjula K, Vasankari T. Promoting walking among office employees - evaluation of a randomized controlled intervention with pedometers and e-mail messages. BMC Public Health. 2012;12(403):1-11.	Ineligible population

Reference	Exclusion reason
Alfonso J, Hall TV, Dunn ME. Feedback-based alcohol interventions for mandated students: an effectiveness study of three modalities. Clin Psychol Psychother. 2013;20(5):411-23.	Ineligible outcomes
Alouki K, Delisle H, Bermudez-Tamayo C, Johri M. Lifestyle interventions to prevent type 2 diabetes: a systematic review of economic evaluation studies. J Diabetes Res. 2016;2016:E2159890.	Systematic review
Aminde LN, Takah NF, Zapata-Diomedi B, Veerman JL. Primary and secondary prevention interventions for cardiovascular disease in low-income and middle-income countries: a systematic review of economic evaluations. Cost Eff Resour Alloc. 2018;16(22):1-34.	Systematic review
Angus C, Latimer N, Preston L, Li J, Purshouse R. What are the implications for policy makers? A systematic review of the cost-effectiveness of screening and brief interventions for alcohol misuse in primary care. Frontiers in Psychiatry. 2014;5:114.	Ineligible intervention
Angus C, Li J, Romero-Rodriguez E, Anderson P, Parrott S, Brennan A. Cost-effectiveness of strategies to improve delivery of brief interventions for heavy drinking in primary care: results from the ODHIN trial. Eur J Public Health. 2018;29(2):219-25.	Ineligible intervention
Archer E, Groessl EJ, Sui X, McClain AC, Wilcox S, Hand GA, et al. An economic analysis of traditional and technology-based approaches to weight loss. Am J Prev Med. 2012;43(2):176-82.	Ineligible population
Bailey J, Mann S, Wayal S, Hunter R, Free C, Abraham C, et al. Sexual health promotion for young people delivered via digital media: a scoping review. NIHR Journals Library 2015	Ineligible study design
Bailey JV, Webster R, Hunter R, Griffin M, Freemantle N, Rait G, et al. The men's safer sex project: intervention development and feasibility randomized controlled trial of an interactive digital intervention to increase condom use in men. Health Technol Assess. 2016;20(91):1-152.	Ineligible population
Bhardwaj NN, Wodajo B, Gochipathala K, Paul DP, 3rd, Coustasse A. Can mHealth revolutionize the way we manage adult obesity? Perspect Health Inf Manag. 2017;14:1A.	Systematic review
Blake H. Text messaging interventions increase adherence to antiretroviral therapy and smoking cessation. Evid Based Med. 2014;19(1):35-36.	Ineligible outcomes
Blankers M, Nabitz U, Smit F, Koeter MW, Schippers GM. Economic evaluation of internet-based interventions for harmful alcohol use alongside a pragmatic randomized controlled trial. J Med Internet Res. 2012;14(5):E134.	Ineligible population
Block G, Sternfeld B, Block CH, Block TJ, Norris J, Hopkins D, et al. Development of alive! (A lifestyle intervention via email), and its effect on health-related quality of life, presenteeism, and other behavioral outcomes: randomized controlled trial. J Med Internet Res. 2008;10(4):E43.	Ineligible outcomes
Brown J. Internet-based intervention for smoking cessation (StopAdvisor) in people with low and high socioeconomic status: a randomised controlled trial. Lancet Respir Med. 2014;2(12):997-1006.	Ineligible study design
Bull S, Devine S, Schmiege SJ, Pickard L, Campbell J, Shlay JC. Text messaging, teen outreach program, and sexual health behavior: a cluster randomized trial. Am J Public Health. 2016;106(S1):S117-24.	Ineligible intervention

Reference	Exclusion reason
Burford O, Jiwa M, Carter O, Parsons R, Hendrie D. Internet-based photoaging within Australian pharmacies to promote smoking cessation: randomized controlled trial. J Med Internet Res. 2013;15(3):E64.	Ineligible population
Burgos JL, Patterson TL, Graff-Zivin JS, Kahn JG, Rangel MG, Lozada MR, et al. Cost-effectiveness of combined sexual and injection risk reduction interventions among female sex workers who inject drugs in two very distinct Mexican border cities. PLoS ONE. 2016;11(2):E0147719.	Ineligible intervention
Burn E, Marshall AL, Miller YD, Barnett AG, Fjeldsoe BS, Graves N. The cost-effectiveness of the MobileMums intervention to increase physical activity among mothers with young children: a Markov model informed by a randomised controlled trial. BMJ Open. 2015;5(4):E007226.	Ineligible outcomes
Burn E, Nghiem S, Jan S, Redfern J, Rodgers A, Thiagalingam A, et al. Cost-effectiveness of a text message programme for the prevention of recurrent cardiovascular events. Heart. 2017;103(12):923-30.	Ineligible population
Calhoun PS, Datta S, Olsen M, Smith VA, Moore SD, Hair LP, et al. Comparative effectiveness of an internet-based smoking cessation intervention versus clinic-based specialty care for veterans. J Subst Abuse Treat. 2016;69:19-27.	Ineligible population
Carr SM, Lhussier M, Forster N, Geddes L, Deane K, Pennington M, et al. An evidence synthesis of qualitative and quantitative research on component intervention techniques, effectiveness, cost-effectiveness, equity and acceptability of different versions of health-related lifestyle advisor role in improving health. Health Technol Assess. 2011;15(9)	Ineligible outcomes
Cecchini M, Sassi F, Lauer JA, Lee YY, Guajardo-Barron V, Chisholm D. Tackling of unhealthy diets, physical inactivity, and obesity: health effects and cost-effectiveness. Lancet. 2010;376(9754):1775-84.	Ineligible outcomes
Chen F, Su W, Becker SH, Payne M, Sweet CMC, Peters AL, et al. Clinical and economic impact of a digital, remotely-delivered intensive behavioral counseling program on medicare beneficiariesat risk for diabetes and cardiovascular disease. PLoS ONE. 2016;11(10):E0163627.	Ineligible intervention
Chen YF, Madan J, Welton N, Yahaya I, Aveyard P, Bauld L, et al. Effectiveness and cost-effectiveness of computer and other electronic aids for smoking cessation: a systematic review and network meta-analysis. Health Technol Assess. 2012;16(38):1-205.	Ineligible population
Cheng Q, Church J, Haas M, Goodall S, Sangster J, Furber S. Cost-effectiveness of a population-based lifestyle intervention to promote healthy weight and physical activity in non-attenders of cardiac rehabilitation. Heart Lung Circ. 2016;25(3):265-74.	Ineligible intervention
Cheung KL, Wijnen B, de Vries H. A review of the theoretical basis, effects, and cost effectiveness of online smoking cessation interventions in the netherlands: a mixed-methods approach. J Med Internet Res. 2017;19(6):E230.	Ineligible population
Cheung K-L, Wijnen BFM, Hiligsmann M, Coyle K, Coyle D, Pokhrel S, et al. Is it cost-effective to provide internet-based interventions to complement the current provision of smoking cessation services in the Netherlands? An analysis based on the EQUIPTMOD. Addiction. 2018;113(Suppl 1):87-95.	Ineligible population
Clayforth C, Pettigrew S, Mooney K, Lansdorp-Vogelaar I, Rosenberg M, Slevin T. A cost-effectiveness analysis of online, radio and print	Ineligible intervention

Reference	Exclusion reason
tobacco control advertisements targeting 25-39 year-old males. Aust N Z J Public Health. 2014;38(3):270-74.	
Cleghorn C, Wilson N, Nair N, Kvizhinadze G, Nghiem N, McLeod M, et al. Health Benefits and Cost-Effectiveness From Promoting Smartphone Apps for Weight Loss: Multistate Life Table Modeling. JMIR mHealth and uHealth 2019;7(1): e11118	Ineligible intervention
Cobiac LJ, Vos T, Barendregt JJ. Cost-effectiveness of interventions to promote physical activity: a modelling study. PLos Med. 2009;6(7):1-11.	Ineligible population
Cohen DA, Wu SY, Farley TA. Comparing the cost-effectiveness of HIV prevention interventions. J Acquir Immune Defic Syndr. 2004;37(3):1404-14.	Ineligible intervention
Comello, Maria Leonora G and Porter, Jeannette H. Concept Test of a Smoking Cessation Smart Case. Telemed J E Health 2018:4	Ineligible intervention
Cooper K, Shepherd J, Picot J, Jones J, Kavanagh J, Harden A, et al. An economic model of school-based behavioral interventions to prevent sexually transmitted infections. Int J Technol Assess Health Care. 2012;28(4):407-14.	Ineligible intervention
Crombie IK, Falconer DW, Irvine L, Williams B, Ricketts IW, Humphris G, et al. Reducing alcohol-related harm in disadvantaged men: development and feasibility assessment of a brief intervention delivered by mobile telephone. NIHR Journals Library 2013	Ineligible study design
Daley A, Jolly K, Madigan C, Griffin R, Roalfe A, Lewis A, et al. A brief behavioural intervention to promote regular self-weighing to prevent weight regain after weight loss: a RCT. NIHR Journals Library 2019	Ineligible intervention
Daly AT, Deshmukh AA, Vidrine DJ, Prokhorov AV, Frank SG, Tahay PD, et al. Cost-effectiveness analysis of smoking cessation interventions using cell phones in a low-income population. Tob Control. 2019;28(1):88-94.	Ineligible population
Dandona L, Kumar SG, Kumar GA, Dandona R. Cost-effectiveness of HIV prevention interventions in Andhra Pradesh state of India. BMC Health Serv Res. 2010;10(117):1-8.	Ineligible intervention
Devi R, Singh SJ, Powell J, Fulton EA, Igbinedion E, Rees K. Internet-based interventions for the secondary prevention of coronary heart disease. Cochrane Database Syst Rev. 2015;12:CD009386.	Ineligible outcomes
Dobbie F, Hiscock R, Leonardi-Bee J, Murray S, Shahab L, Aveyard P, et al. Evaluating long-term outcomes of NHS stop smoking services (ELONS): a prospective cohort study. Health Technol Assess. 2014;18(35):1-424.	Ineligible intervention
Donker T, Blankers M, Hedman E, Ljotsson B, Petrie K, Christensen H. Economic evaluations of internet interventions for mental health: a systematic review. Psychol Med. 2015;45(16):3357-76.	Ineligible outcomes
Drost RM, Paulus AT, Jander AF, Mercken L, de Vries H, Ruwaard D*, et al.* A web-based computer-tailored alcohol prevention program for adolescents: cost-effectiveness and intersectoral costs and benefits. J Med Internet Res. 2016;18(4):E93	Ineligible outcomes
Ekpu VU, Brown AK. The economic impact of smoking and of reducing smoking prevalence: review of evidence. Tobacco Use Insights. 2015;8:1-35.	Systematic review

Reference	Exclusion reason
Emery JL, Coleman T, Sutton S, Cooper S, Leonardi-Bee J, Jones M, et al. Uptake of tailored text message smoking cessation support in pregnancy when advertised on the internet (MiQuit): observational study. J Med Internet Res. 2018;20(4):E146.	Ineligible study design
Emmons KM, Puleo E, Greaney ML, Gillman MW, Bennett GG, Haines J, et al. A randomized comparative effectiveness study of Healthy Directions 2: a multiple risk behavior intervention for primary care. Prev Med. 2014;64:96-102.	Ineligible intervention
Estabrooks PA, Wilson KE, McGuire TJ, Harden SM, Ramalingam NP, Schoepke L, et al. A quasi-experiment to assess the impact of a scalable, community-based weight loss program: combining reach, effectiveness, and cost. J Gen Intern Med. 2017;32(Suppl 1):24-31.	Ineligible population
Fischer HH, Durfee MJ, Raghunath SG, Ritchie ND. Short Message Service Text Message Support for Weight Loss in Patients With Prediabetes: Pragmatic Trial. JMIR Diabetes. 2019;4(2):e12985.	Ineligible study design
Fletcher A, Willmott M, Langford R, White J, Poole R, Brown R, et al. Pilot trial and process evaluation of a multilevel smoking prevention intervention in further education settings. NIHR Journals Library 2017	Ineligible study design
Folse SB, Falzon L, Trudeau KJ, Sciamanna CN, Schwartz JE, Davidson KW. Computer-based interventions for weight loss or weight maintenance in overweight or obese people. Cochrane Database Syst Rev. 2009;1:CD007675.	Ineligible study design
Forrest JI, Wiens M, Kanters S, Nsanzimana S, Lester RT, Mills EJ. Mobile health applications for HIV prevention and care in Africa. Curr Opin HIV AIDS. 2015;10(6):464-71.	Ineligible study design
Galarraga O, Colchero MA, Wamai RG, Bertozzi SM. HIV prevention cost-effectiveness: a systematic review. BMC Public Health. 2009;9(Suppl 1):S5.	Ineligible intervention
Gallagher R, Neubeck L. How health technology helps promote cardiovascular health outcomes. Med J Aust. 2016;205(3):107-08.	Ineligible study design
GC V, Wilson EC, Suhrcke M, Hardeman W, Sutton S. Are brief interventions to increase physical activity cost-effective? A systematic review. Br J Sports Med. 2016;50(7):408-17.	Systematic review
Gillett M, Royle P, Snaith A, Scotland G, Poobalan A, Imamura M, et al. Non-pharmacological interventions to reduce the risk of diabetes in people with impaired glucose regulation: a systematic review and economic evaluation. Health Technol Assess. 2012;16(33):1-236.	Ineligible intervention
Godfrey C. Cost effectiveness of treatment for alcohol problems: findings of the randomised UK alcohol treatment trial (UKATT). BMJ. 2005;331(7516):544-48.	Ineligible intervention
Golsteijn RH, Peels DA, Evers SM, Bolman C, Mudde AN, de Vries H, et al. Cost-effectiveness and cost-utility of a web-based or print-delivered tailored intervention to promote physical activity among adults aged over fifty: an economic evaluation of the Active Plus intervention. Int J Behav Nutr Phys Act. 2014;11:122.	Ineligible population
Goode AD, Lawler SP, Brakenridge CL, Reeves MM, Eakin EG. Telephone, print, and web-based interventions for physical activity, diet, and weight control among cancer survivors: a systematic review. J Cancer Surviv. 2015;9(4):660-82.	Ineligible outcomes

Reference	Exclusion reason
Gozzoli V, Palmer AJ, Brandt A, Spinas GA. Economic and clinical impact of alternative disease management strategies for secondary prevention in type 2 diabetes in the Swiss setting. Swiss Med Wkly. 2001;131(21-22):303-10.	Ineligible intervention
Graham AL, Chang Y, Fang Y, Cobb NK, Tinkelman DS, Niaura RS, et al. Cost-effectiveness of internet and telephone treatment for smoking cessation: an economic evaluation of The iQUITT Study. Tob Control. 2013;22(6):E11.	Ineligible population
Guerriero C, Cairns J, Roberts I, Rodgers A, Whittaker R, Free C. The cost-effectiveness of smoking cessation support delivered by mobile phone text messaging: txt2stop. Eur J Health Econ. 2013;14(5):789-97.	Ineligible population
Harris J, Felix L, Miners A, Murray E, Michie S, Fergusn E, et al. Adaptive e-learning to improve dietary behaviour: a systematic review and cost-effectiveness analysis. Health Technol Assess. 2011;15(37):1-160.	Ineligible population
Harris T, Kerry S, Victor C, Iliffe S, Ussher M, Fox-Rushby J, et al. A pedometer-based walking intervention in 45- to 75-year-olds, with and without practice nurse support: the PACE-UP three-arm cluster RCT. Health Technol Assess. 2018;22(37):1-274	Ineligible intervention
Hawkins J, Charles JM, Edwards M, Hallingberg B, McConnon L, Edwards RT, et al. Acceptability and Feasibility of Implementing Accelorometry-Based Activity Monitors and a Linked Web Portal in an Exercise Referral Scheme: Feasibility Randomized Controlled Trial. J Med Internet Res 2019;21(3):e12374	Ineligible intervention
Henderson JA, Chubak J, O'Connell J, Ramos MC, Jensen J, Jobe JB, et al. Design of a randomized controlled trial of a web-based intervention to reduce cardiovascular disease risk factors among remote reservation-dwelling American Indian adults with type 2 diabetes. J Prim Prev. 2012;33(4):209-22.	Ineligible study design
Hersey JC, Khavjou O, Strange LB, Atkinson RL, Blair SN, Campbell S, et al. The efficacy and cost-effectiveness of a community weight management intervention: a randomized controlled trial of the health weight management demonstration. Prev Med. 2012;54(1):42-49.	Ineligible population
Hollingworth W, Hawkins J, Lawlor DA, Brown M, Marsh T, Kipping RR. Economic evaluation of lifestyle interventions to treat overweight or obesity in children. Int J Obes. 2012;36(4):559-66.	Ineligible intervention
Holmen H, Torbjornsen A, Wahl AK, Jenum AK, Smastuen MC, Arsand E, et al. A mobile health intervention for self-management and lifestyle change for persons with type 2 diabetes, part 2: one-year results from the Norwegian randomized controlled trial renewing health. Diabetes Technol Ther. 2016;18(Suppl 1):S58-59.	Ineligible study design
Holtz B, Krein SL, Bentley DR, Hughes ME, Giardino ND, Richardson CR. Comparison of veteran experiences of low-cost, home-based diet and exercise interventions. J Rehabil Res Dev. 2014;51(1):149-60.	Ineligible outcomes
Hunter R, Wallace P, Struzzo P, Vedova RD, Scafuri F, Tersar C*, et al.* Randomised controlled non-inferiority trial of primary care-based facilitated access to an alcohol reduction website: cost-effectiveness analysis. BMJ Open. 2017;7(11):E014577.	Ineligible population

Reference	Exclusion reason
Iribarren SJ, Cato K, Falzon L, Stone PW. What is the economic evidence for mHealth? A systematic review of economic evaluations of mHealth solutions. PLoS ONE. 2017;12(2):E0170581.	Systematic review
Jacobs-van der Bruggen MA, Bos G, Bemelmans WJ, Hoogenveen RT, Vijgen SM, Baan CA. Lifestyle interventions are cost-effective in people with different levels of diabetes risk: results from a modeling study. Diabetes Care. 2007;30(1):128-34.	Ineligible intervention
Jacobs-van der Bruggen MA, van Baal PH, Hoogenveen RT, Feenstra TL, Briggs AH, Lawson K, et al. Cost-effectiveness of lifestyle modification in diabetic patients. Diabetes Care. 2009;32(8):1453-58.	Ineligible intervention
Jones M, Smith M, Lewis S, Parrott S, Coleman T. A dynamic, modifiable model for estimating cost-effectiveness of smoking cessation interventions in pregnancy: application to an RCT of self-help delivered by text message. Addiction. 2019;114(2):353-65.	Ineligible population
Joo N-S, Park Y-W, Park K-H, Kim C-W, Kim B-T. Cost-effectiveness of a community-based obesity control programme. J Telemed Telecare. 2010;16(2):63-7.	Ineligible population
Kachur R, Hall W, Coor A, Kinsey J, Collins D, Strona FV. The use of technology for sexually transmitted disease partner services in the united states: a structured review. Sex Transm Dis. 2018;45(11):707-12.	Ineligible outcomes
Kaner EF, Beyer FR, Garnett C, Crane D, Brown J, Muirhead C, et al. Personalised digital interventions for reducing hazardous and harmful alcohol consumption in community-dwelling populations. Cochrane Database Syst Rev. 2017;9:CD011479.	Ineligible outcomes
Keyserling TC, Sheridan SL, Draeger LB, Finkelstein EA, Gizlice Z, Kruger E, et al. A comparison of live counseling with a web-based lifestyle and medication intervention to reduce coronary heart disease risk: a randomized clinical trial. JAMA Intern Med. 2014;174(7):1144-57.	Ineligible population
Khan N, Marvel FA, Wang J, Martin SS. Digital health technologies to promote lifestyle change and adherence. Curr Treat Options Cardiovasc Med. 2017;19(8):60.	Ineligible outcomes
King C, Llewellyn C, Shahmanesh M, Abraham C, Bailey J, Burns F, et al. Sexual risk reduction interventions for patients attending sexual health clinics: a mixed-methods feasibility study. Health Technol Assess. 2019;23(12):1-122	Ineligible study design
Korber K. Quality assessment of economic evaluations of health promotion programs for children and adolescents-a systematic review using the example of physical activity. Health Econ Rev. 2015;5(1):1-14.	Ineligible intervention
Krishna S, Boren SA, Balas EA. Healthcare via cell phones: a systematic review. Telemed J E Health. 2009;15(3):231-40.	Ineligible study design
Krishnan A, Finkelstein EA, Levine E, Foley P, Askew S, Steinberg D, et al. A Digital Behavioral Weight Gain Prevention Intervention in Primary Care Practice: Cost and Cost-Effectiveness Analysis. J Med Internet Res. 2019;21(5):e12201	Ineligible intervention
Kruger J, Brennan A, Strong M, Thomas C, Norman P, Epton T. The cost-effectiveness of a theory-based online health behaviour intervention	Ineligible population

Reference	Exclusion reason
for new university students: an economic evaluation. BMC Public Health. 2014;14(1011):1-16.	
Krukowski RA, Tilford JM, Harvey-Berino J, West DS. Comparing behavioral weight loss modalities: incremental cost-effectiveness of an internet-based versus an in-person condition. Obesity (Silver Spring). 2011;19(8):1629-35.	Ineligible population
Larsen B, Marcus B, Pekmezi D, Hartman S, Gilmer T. A web-based physical activity intervention for Spanish-speaking Latinas: a costs and cost-effectiveness analysis. J Med Internet Res. 2017;19(2):E43.	Ineligible population
Larsen-Cooper E, Bancroft E, Rajagopal S, O'Toole M, Levin A. Scale matters: a cost-outcome analysis of an m-health intervention in Malawi. Telemed J E Health. 2016;22(4):317-24.	Ineligible population
Lawlor DA, Kipping RR, Anderson EL, Howe LD, Chittleborough CR, Moure-Fernandez A, et al. Active for Life Year 5: a cluster randomised controlled trial of a primary school-based intervention to increase levels of physical activity, decrease sedentary behaviour and improve diet. NIHR Journals Library 2016	Ineligible intervention
Leahey TM, Fava JL, Seiden A, Fernandes D, Doyle C, Kent K, et al. A randomized controlled trial testing an internet delivered cost-benefit approach to weight loss maintenance. Prev Med. 2016;92:51-57.	Ineligible population
Leahey TM, Thomas G, Fava JL, Subak LL, Schembri M, Krupel K, et al. Adding evidence-based behavioral weight loss strategies to a statewide wellness campaign: a randomized clinical trial. Am J Public Health. 2014;104(7):1300-06.	Ineligible population
Levy DE, Klinger EV, Linder JA, Fleegler EW, Rigotti NA, Park ER, et al. Cost-effectiveness of a health system-based smoking cessation program. Nicotine Tob Res 2017;19(12):1508-15.	Ineligible intervention
Lewis BA, Williams DM, Neighbors CJ, Jakicic JM, Marcus BH. Cost Analysis of Internet vs. Print Interventions for Physical Activity Promotion. Psychol Sport Exerc. 2010: 11(3):246-249	Ineligible study design
Li R, Qu S, Zhang P, Chattopadhyay S, Gregg EW, Albright A, et al. Economic evaluation of combined diet and physical activity promotion programs to prevent type 2 diabetes among persons at increased risk: a systematic review for the community preventive services task force. Ann Intern Med. 2015;163(6):452-60.	Ineligible outcomes
Little P, Stuart B, Hobbs FR, Kelly J, Smith ER, Bradbury KJ, et al. An internet-based intervention with brief nurse support to manage obesity in primary care (POWeR+): a pragmatic, parallel-group, randomised controlled trial. Lancet. 2016;4(10):821-8.	Ineligible population
Little P, Stuart B, Richard Hobbs FD, Kelly J, Smith ER, Bradbury KJ, et al. Randomised controlled trial and economic analysis of an internet-based weight management programme: POWeR+ (positive online weight reduction). Health Technol Assess. 2017;21(4):1-61.	Ineligible population
Lohan M, Aventin A, Maguire L, Curran R, McDowell C, Agus A, et al. Increasing boys' and girls' intentions to avoid teenage pregnancy: a cluster randomised controlled feasibility trial of an interactive video drama-based intervention in post-primary schools in Northern Ireland. Public Health Research. 2017; 5(1): Available from: https://dx.doi.org/10.3310/phr05010	Ineligible study design

Reference	Exclusion reason
Lohse N, Marseille E, Kahn JG. Development of a model to assess the cost-effectiveness of gestational diabetes mellitus screening and lifestyle change for the prevention of type 2 diabetes mellitus. Int J Gynaecol Obstet. 2011;115(Suppl 1):S20-25.	Ineligible intervention
Lorig KR, Ritter PL, Dost A, Plant K, Laurent DD, McNeil I. The expert patients programme online, a 1-year study of an internet-based self-management programme for people with long-term conditions. Chronic Illness. 2008;4(4):247-56.	Ineligible population
Loveman E, Frampton GK, Shepherd J, Picot J, Cooper K, Bryant J, et al. The clinical effectiveness and cost-effectiveness of long-term weight management schemes for adults: a systematic review. Health Technol Assess. 2008;15(2):1-182.	Ineligible outcomes
Lu C, Schultz AB, Sill S, Petersen R, Young JM, Edington DW. Effects of an incentive-based online physical activity intervention on health care costs. J Occup Environ Med. 2008;50(11):1209-15.	Ineligible population
Luxton DD, Hansen RN, Stanfill K. Mobile app self-care versus in-office care for stress reduction: a cost minimization analysis. J Telemed Telecare. 2014;20(8):431-35.	Ineligible population
Maddison R, Pfaeffli L, Whittaker R, Stewart R, Kerr A, Jiang Y, et al. A mobile phone intervention increases physical activity in people with cardiovascular disease: results from the HEART randomized controlled trial. Eur J Prev Cardiol. 2015;22(6):701-9.	Ineligible population
Marcolino MS, Oliveira JAQ, D'Agostino M, Ribeiro AL, Alkmim MBM, Novillo-Ortiz D. The impact of mHealth interventions: systematic review of systematic reviews. JMIR Mhealth Uhealth. 2018;6(1):E23.	Ineligible outcomes
Mateo KF, Jay M. Access to a behavioral weight loss website with or without group sessions increased weight loss in statewide campaign. J Clin Outcomes Manag. 2014;21(8):345-48.	Ineligible outcomes
Mauriello LM, Gkbayrak NS, Van Marter DF, Paiva AL, Prochaska JM. An internet-based computer-tailored intervention to promote responsible drinking: findings from a pilot test with employed adults. Alcohol Treat Q. 2011;30(1):91-108.	Ineligible outcomes
McConnon A, Kirk SFL, Cockroft JE, Harvey EL, Greenwood DC, Thomas JD, et al. The internet for weight control in an obese sample: results of a randomised controlled trial. BMC Health Serv Res. 2007;7:206.	Ineligible population
Medical Advisory S. Behavioural interventions for type 2 diabetes: an evidence-based analysis. Ont Health Technol Assess Ser. 2009;9(21):1-45.	Ineligible outcomes
Miners A, Harris J, Felix L, Murray E, Michie S, Edwards P. An economic evaluation of adaptive e-learning devices to promote weight loss via dietary change for people with obesity. BMC Health Serv Res. 2012;12(190):1-9.	Ineligible population
Moreau M, Gagnon M-P, Boudreau F. Development of a fully automated, web-based, tailored intervention promoting regular physical activity among insufficiently active adults with type 2 diabetes: integrating the I-change model, self-determination theory, and motivational interviewing components. JMIR research protocols. 2015;4(1):E25.	Ineligible study design

Reference	Exclusion reason
Murphy SM, Campbell ANC, Ghitza UE, Kyle TL, Bailey GL, Nunes EV, et al. Cost-effectiveness of an internet-delivered treatment for substance abuse: data from a multisite randomized controlled trial. Drug Alcohol Depend. 2016;161:119-26.	Insufficient information about components and characteristics of interest
Naughton F, Cooper S, Bowker K, Campbell K, Sutton S, Leonardi-Bee J, et al. Adaptation and uptake evaluation of an SMS text message smoking cessation programme (MiQuit) for use in antenatal care. BMJ Open. 2015;5(10):E008871.	Ineligible outcomes
Naughton F, Cooper S, Foster K, Emery J, Leonardi-Bee J, Sutton S, et al. Large multi-centre pilot randomized controlled trial testing a low-cost, tailored, self-help smoking cessation text message intervention for pregnant smokers (MiQuit). Addiction. 2017;112(7):1238-49.	Ineligible population
Neumann A, Schwarz P, Lindholm L. Estimating the cost-effectiveness of lifestyle intervention programmes to prevent diabetes based on an example from Germany: Markov modelling. Cost Eff Resour Alloc. 2011;9(17):1-13.	Ineligible intervention
Ohinmaa A, Chatterley P, Nguyen T, Jacobs P. Telehealth in substance abuse and addiction: review of the literature on smoking, alcohol, drug abuse and gambling. Alberta: Institute of Health Economics; 2010. Available from: https://www.ihe.ca/advanced-search/telehealth-in-substance-abuse-and-addiction-review-of-the-literature-on-smoking-alcohol-drug-abuse-and-gambling.	Systematic review
Olmstead TA, Ostrow CD, Carroll KM. Cost-effectiveness of computer-assisted training in cognitive-behavioral therapy as an adjunct to standard care for addiction. Drug Alcohol Depend. 2010;110(3):200-07.	Insufficient information about components and characteristics of interest
Oosterhoff M, Bosma H, van Schayck OCP, Evers SMAA, Dirksen CD, Joore MA. A systematic review on economic evaluations of school-based lifestyle interventions targeting weight-related behaviours among 4-12year olds: issues and ways forward. Prev Med. 2018;114:115-22.	Ineligible intervention
Osilla KC, Van Busum K, Schnyer C, Larkin JW, Eibner C, Mattke S. Systematic review of the impact of worksite wellness programs. Am J Manag Care. 2012;18(2):E68-81.	Ineligible outcomes
Padwal RS, Klarenbach S, Sharma AM, Fradette M, Jelinski SE, Edwards A, et al. The evaluating self-management and educational support in severely obese patients awaiting multidisciplinary bariatric care (EVOLUTION) trial: principal results. BMC Med. 2017;15(1):46.	Ineligible population
Park AL, McDaid D, Weiser P, Von Gottberg C, Becker T, Kilian R, et al. Examining the cost effectiveness of interventions to promote the physical health of people with mental health problems: a systematic review. BMC Public Health. 2013;13(787):1-17.	Ineligible outcomes
Peels DA, Hoogenveen RR, Feenstra TL, Golsteijn RH, Bolman C, Mudde AN, et al. Long-term health outcomes and cost-effectiveness of a computer-tailored physical activity intervention among people aged over fifty: modelling the results of a randomized controlled trial. BMC Public Health. 2014;14(1):1099.	Ineligible population
Perman G, Rossi E, Waisman GD, Aguero C, Gonzalez CD, Pallordet CL, et al. Cost-effectiveness of a hypertension management programme in an elderly population: a Markov model. Cost Eff Resour Alloc. 2011;9(4):1-11.	Ineligible intervention

Reference	Exclusion reason
Pifarre M, Carrera A, Vilaplana J, Cuadrado J, Solsona S, Abella F, et al. TControl: a mobile app to follow up tobacco-quitting patients. Comput Methods Programs Biomed. 2017;142:81-89.	Ineligible population
Pringle A, Cooke C, Gilson N, Marsh K, McKenna J. Cost-effectiveness of interventions to improve moderate physical activity: a study in nine UK sites. Health Educ J. 2010;69(2):211-24.	Ineligible intervention
Prinja S, Bahuguna P, Rudra S, Gupta I, Kaur M, Mehendale SM, et al. Cost effectiveness of targeted HIV prevention interventions for female sex workers in India. Sex Transm Infect. 2011;87(4):354-61.	Ineligible intervention
Prybutok G. An analysis of randomised controlled trials that utilise internet based smoking reduction/cessation programs. IJEH. 2015;8(2-4):202-19.	Ineligible outcomes
Radcliff TA, Bobroff LB, Lutes LD, Durning PE, Daniels MJ, Limacher MC, et al. Comparing costs of telephone vs face-to-face extended-care programs for the management of obesity in rural settings. J Acad Nutr Diet. 2012;112(9):1363-73.	Ineligible intervention
Rasu RS, Hunter CM, Peterson AL, Maruska HM, Foreyt JP. Economic evaluation of an internet-based weight management program. Am J Manag Care. 2010;16(4):E98-104.	Ineligible population
Reback, C.J.; Fletcher, J.B.; Leibowitz, A.A. Cost effectiveness of text messages to reduce methamphetamine use and HIV sexual risk behaviors among men who have sex with men. Journal of Substance Abuse Treatment 2019;100: 59-63	Ineligible outcome
Redman LM, Gilmore LA, Breaux J, Thomas DM, Elkind-Hirsch K, Stewart T, et al. Effectiveness of SmartMoms, a novel ehealth intervention for management of gestational weight gain: randomized controlled pilot trial. JMIR Mhealth Uhealth. 2017;5(9):E133.	Ineligible population
Riemsma R, Pattenden J, Bridle M, Sowden A, Mather L, Watt I, et al. A systematic review of the effectiveness of interventions based on a stages-of-change approach to promote individual behaviour change in health care settings. Health Technol Assess. 2002; 6(24): 1-244.	Systematic review
Rinaldi G, Kiadaliri AA, Haghparast-Bidgoli H. Cost effectiveness of HIV and sexual reproductive health interventions targeting sex workers: a systematic review. Cost Eff Resour Alloc. 2018;16(63):1-13.	Ineligible intervention
Robertson C, Archibald D, Avenell A, Douglas F, Hoddinott P, van Teijlingen E, et al. Systematic reviews of and integrated report on the quantitative, qualitative and economic evidence base for the management of obesity in men. Health Technol Assess. 2014;18(35)	Systematic review
Robroek SJW, Polinder S, Bredt FJ, Burdorf A. Cost-effectiveness of a long-term internet-delivered worksite health promotion programme on physical activity and nutrition: a cluster randomized controlled trial. Health Educ Res. 2012;27(3):399-410.	Ineligible population
Rogozińska E, Marlin N, Jackson L, Rayanagoudar G, Ruifrok AE, Dodds J, et al. Effects of antenatal diet and physical activity on maternal and fetal outcomes: individual patient data meta-analysis and health economic evaluation. Health Technol Assess. 2017;21(41):1-158.	Ineligible intervention
Rollo ME, Burrows T, Vincze LJ, Harvey J, Collins CE, Hutchesson MJ. Cost evaluation of providing evidence-based dietetic services for weight	Ineligible population

Reference	Exclusion reason
management in adults: in-person versus eHealth delivery. Nutr Diet. 2018;75(1):35-43.	
Rubinstein A, Garcia Marti S, Souto A, Ferrante D, Augustovski F. Generalized cost-effectiveness analysis of a package of interventions to reduce cardiovascular disease in Buenos Aires, Argentina. Cost Eff Resour Alloc. 2009;7(10):1-10.	Ineligible intervention
Sacks N, Cabral H, Kazis LE, Jarrett KM, Vetter D, Richmond R, et al. A web-based nutrition program reduces health care costs in employees with cardiac risk factors: before and after cost analysis. J Med Internet Res. 2009;11(4):E43.	Ineligible population
Sanyal C, Stolee P, Juzwishin D, Husereau D. Economic evaluations of eHealth technologies: a systematic review. PLoS ONE. 2018;13(6):E0198112.	Ineligible study design
Schulz DN, Smit ES, Stanczyk NE, Kremers SPJ, de Vries H, Evers SMAA. Economic evaluation of a web-based tailored lifestyle intervention for adults: findings regarding cost-effectiveness and cost-utility from a randomized controlled trial. J Med Internet Res. 2014;16(3):E91.	Ineligible study design
Schulz DN, Smit ES, Stanczyk NE, Kremers SPJ, De Vries H, Evers SMAA. Economic evaluation of a web-based tailored lifestyle intervention for adults: findings regarding cost-effectiveness and cost-utility from a randomized controlled trial. Diabetes Technol Ther. 2015;17(Suppl 1):S54-55.	Ineligible population
Semwal M, Whiting P, Bajpai R, Bajpai S, Kyaw BM, Tudor C. Digital Education for Health Professions on Smoking Cessation Management: Systematic Review by the Digital Health Education Collaboration. J Med Internet Res 2019;21(3):e13000	Ineligible study design
Sevick MA, Napolitano MA, Papandonatos GD, Gordon AJ, Reiser LM, Marcus BH. Cost-effectiveness of alternative approaches for motivating activity in sedentary adults: results of project STRIDE. Prev Med. 2007;45(1):54-61.	Ineligible intervention
Sharifi M, Franz C, Horan CM, Giles CM, Long MW, Ward ZJ, et al. Cost-effectiveness of a clinical childhood obesity intervention. Pediatrics. 2017;140(5):1-11.	Ineligible intervention
Shaw R, Fenwick E, Baker G, McAdam C, Fitzsimons C, Mutrie N. 'Pedometers cost buttons': the feasibility of implementing a pedometer based walking programme within the community. BMC Public Health. 2011;11(200):1-9.	Ineligible population
Shepherd J, Kavanagh J, Picot J, Cooper K, Harden A, Barnett-Page E, et al. The effectiveness and cost-effectiveness of behavioural interventions for the prevention of sexually transmitted infections in young people aged 13–19: a systematic review and economic evaluation. Health Technol Assess. 2010;14(7):1-230.	Ineligible intervention
Skov-Ettrup L. The effectiveness of telephone counselling and internet- and text-message-based support for smoking cessation: results from a randomized controlled trial. Addiction. 2016;111(7):1257-66.	Ineligible population
Smit ES, Evers SM, de Vries H, Hoving C. Cost-effectiveness and cost-utility of internet-based computer tailoring for smoking cessation. J Med Internet Res. 2013;15(3):E57.	Ineligible population

Reference	Exclusion reason
Smit F, Lokkerbol J, Riper H, Majo MC, Boon B, Blankers M. Modeling the cost-effectiveness of health care systems for alcohol use disorders: how implementation of eHealth interventions improves cost-effectiveness. J Med Internet Res. 2011;13(3):E56.	Ineligible population
Smith KJ, Hsu HE, Roberts MS, Kramer MK, Orchard TJ, Piatt GA, et al. Cost-effectiveness analysis of efforts to reduce risk of type 2 diabetes and cardiovascular disease in Southwestern Pennsylvania, 2005-2007. Prev Chronic Dis. 2010;7(5):A109.	Ineligible intervention
Smith KJ, Kuo S, Zgibor JC, McTigue KM, Hess R, Bhargava T, et al. Cost effectiveness of an internet-delivered lifestyle intervention in primary care patients with high cardiovascular risk. Prev Med. 2016;87:103-09.	Ineligible population
Smith MY, Cromwell J, DePue J, Spring B, Redd W, Unrod M. Determining the cost-effectiveness of a computer-based smoking cessation intervention in primary care. Manag Care. 2007;16(7):48-55.	Ineligible population
Sniehotta FF, Evans EH, Sainsbury K, Adamson A, Batterham A, Becker F, et al. Behavioural intervention for weight loss maintenance versus standard weight advice in adults with obesity: A randomised controlled trial in the UK (NULevel Trial). PLoS Med. 2019;16(5):e1002793	Ineligible population
Sohn S, Helms TM, Pelleter JT, Muller A, Krottinger AI, Schoffski O. Costs and benefits of personalized healthcare for patients with chronic heart failure in the care and education program "Telemedicine for the Heart". Telemed J E Health. 2012;18(3):198-204.	Ineligible intervention
Southard BH, Southard DR, Nuckolls J. Clinical trial of an internet-based case management system for secondary prevention of heart disease. J Cardpulm Rehabil. 2003;23(5):341-34.	Ineligible population
Stanczyk NE, Smit ES, Schulz DN, De Vries H, Bolman C, Muris JWM, et al. An economic evaluation of a video- and text-based computer-tailored intervention for smoking cessation: a cost-effectiveness and cost-utility analysis of a randomized controlled trial. PLoS ONE. 2014;9(10):E110117.	Ineligible population
Sukhanova A, Ritzwoller DP, Alexander G, Calvi JH, Carlier C, McClure JB, et al. Cost analyses of a web-based behavioral intervention to enhance fruit and vegetable consumption. Int J Behav Nutr Phys Act. 2009;6:92.	Ineligible population
Sun Y, You W, Almeida F, Estabrooks P, Davy B. The effectiveness and cost of lifestyle interventions including nutrition education for diabetes prevention: a systematic review and meta-analysis. J Acad Nutr Diet. 2017;117(3):E36(404-21).	Ineligible intervention
Thangaratinam S, Rogozinska E, Jolly K, Glinkowski S, Duda W, Borowiack E, et al. Interventions to reduce or prevent obesity in pregnant women: a systematic review. Health Technol Assess. 2007;16(31):1-191.	Ineligible intervention
The Swedish Council on Technology Assessment in Health Care. Methods of promoting physical activity. A systematic review. Stockholm: SBU; 2006. 1-14. Available from: https://www.ncbi.nlm.nih.gov/books/NBK447978/pdf/Bookshelf_NBK447978.pdf.	Systematic review

Reference	Exclusion reason
Van den Bruel A, Cleemput I, Van Linden A, Schoefs D, Ramaekers D, Bonneux L. Effectiveness and cost-effectiveness of treatments for smoking cessation. KCE. 2004;1A	Systematic review
van Luenen S, Kraaij V, Garnefski N, Spinhoven P, van den Akker-van Marle ME. Cost-utility of a guided Internet-based intervention in comparison with attention only for people with HIV and depressive symptoms: A randomized controlled trial. J Psychosom Res. 2019;118:34-40	Ineligible outcome
Van Wier MF, Dekkers JC, Bosmans JE, Heymans MW, Hendriksen IJM, Pronk NP, et al. Economic evaluation of a weight control program with e-mail and telephone counseling among overweight employees: a randomized controlled trial. Int J Behav Nutr Phys Act. 2012;9(112):1-12.	Ineligible population
Vickerman KA, Keller PA, Deprey M, Lachter RB, Jenssen J, Dreher M. Never quit trying: reengaging tobacco users in statewide cessation services. J Public Health Manag Pract. 2018;24(3):E25-33.	Ineligible population
Vidmar AP, Pretlow R, Borzutzky C, Wee CP, Fox DS, Fink C, et al. An addiction model-based mobile health weight loss intervention in adolescents with obesity. Pediatr Obes. 2019;14(2):E12464.	Ineligible population
Wake M, Baur LA, Gerner B, Gibbons K, Gold L, Gunn J, et al. Outcomes and costs of primary care surveillance and intervention for overweight or obese children: the LEAP 2 randomised controlled trial. BMJ. 2009;339:(B3308)	Ineligible intervention
Wake M, Gold L, McCallum Z, Gerner B, Waters E. Economic evaluation of a primary care trial to reduce weight gain in overweight/obese children: the LEAP trial. Ambul Pediatr. 2008;8(5):336-41.	Ineligible intervention
Webb J, Hall J, Hall K, Fabunmi-Alade R. Increasing the frequency of physical activity very brief advice by nurses to cancer patients. A mixed methods feasibility study of a training intervention. Public Health. 2016;139:121-33.	Ineligible population
Webb J, Fife-Schaw C, Ogden J. A randomised control trial and cost-consequence analysis to examine the effects of a print-based intervention supported by internet tools on the physical activity of UK cancer survivors. Public Health. 2019;171:106-115	Ineligible outcome
West R, Coyle K, Owen L, Coyle D, Pokhrel S, Group ES. Estimates of effectiveness and reach for 'return on investment' modelling of smoking cessation interventions using data from England. Addiction. 2018;113(Suppl 1):19-31.	Ineligible intervention
Whitaker R, Hendry M, Aslam R, Booth A, Carter B, Charles JM, et al. Intervention now to eliminate repeat unintended pregnancy in teenagers (INTERUPT): a systematic review of intervention effectiveness and cost-effectiveness, and qualitative and realist synthesis of implementation factors and user engagement. Health Technol Assess. 2016;20(16):1-214.	Ineligible intervention
Whittaker F, Wade V. The costs and benefits of technology-enabled, home-based cardiac rehabilitation measured in a randomised controlled trial. J Telemed Telecare. 2014;20(7):419-22.	Ineligible intervention
Wong CK, Jiao F-F, Siu S-C, Fung CS, Fong DY, Wong K-W, et al. Cost-effectiveness of a short message service intervention to prevent type 2 diabetes from impaired glucose tolerance. J Diabetes Res. 2016;2016	Ineligible intervention

Reference	Exclusion reason
Wu S, Cohen D, Shi Y, Pearson M, Sturm R. Economic analysis of physical activity interventions. Am J Prev Med. 2011;40(2):149-58.	Systematic review
Wyke S, Bunn C, Andersen E, Silva MN, van Nassau F, McSkimming P, et al. The effect of a programme to improve men's sedentary time and physical activity: The European Fans in Training (EuroFIT) randomised controlled trial. PLoS Med. 2019;16(2):e1002736	Ineligible intervention
Wyke S, Hunt K, Gray CM, et al. Football Fans in Training (FFIT): a randomised controlled trial of a gender-sensitised weight loss and healthy living programme for men – end of study report. NIHR Journals Library 2015	Ineligible intervention
Zanaboni P, Lien LA, Hjalmarsen A, Wootton R. Long-term telerehabilitation of COPD patients in their homes: interim results from a pilot study in Northern Norway. J Telemed Telecare. 2013;19(7):425-9.	Ineligible study design
Zivin K, Sen A, Plegue MA, Maciejewski ML, Segar ML, AuYoung M, et al. Comparative effectiveness of wellness programs: impact of incentives on healthcare costs for obese enrollees. Am J Prev Med. 2017;52(3):347-52.	Ineligible population
Zoellner JM, You W, Estabrooks PA, Chen Y, Davy BM, Porter KJ, et al. Supporting maintenance of sugar-sweetened beverage reduction using automated versus live telephone support: findings from a randomized control trial. Int J Behav Nutr Phys Act. 2018;15(1):97.	Ineligible outcomes

Appendix L – Intervention/comparison matrix

The intervention matrix was made to assess if any associations between intervention components and effectiveness could be deduced. This was then to be tested through subgroup analysis. However, this was not possible because the interventions contained many different components and combinations of components. Therefore, deducing which single components that were associated with effectiveness was not possible.

Brendryen 2017 appears to have the same components in each arm, but one intervention provided more focused information on alcohol and the other intervention provided general health advice (see Appendix F).

Key for "Outcomes" columns	
Most effective (green boxes)	Significantly more effective than other arms; abstinence rate of 20% was considered effective
Equivalent (yellow boxes)	If the other arm is "most effective", then equivalent arm is also effective, but the other arm is significantly more effective
	If the other arm is "ineffective", then equivalent arm is also ineffective, but the other arm is significantly less effective
Ineffective (red boxes)	Significantly less effective than other arms; abstinence rate of below 20% was considered ineffective

		Components of intervention																					Outcomes				
		Feedback					Knowledge on alcohol					Monitoring															
Study	Arm	Normative feedback	Personalised feedback	Conceptions of alcohol consumption of others	Decisional balance exercise	Financial impact	Drinking limits	Health and risks	Pros & cons of drinking	Exercises/ quizzes	Videos/audio files	Diary	Goal setting	Emotional regulation techniques	Coping strategies	Reminders to complete intervention	Values & beliefs	Information on other health behaviours	Healthcare professional	Tailoring	Intensity	Mean alcohol quantity	Mean alcohol frequency	Mean heavy use	Alcohol-related problems	AUDIT score
Bertholet 2015	Intervention	Yes	Yes	No	No	No	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	Yes	1 session					
	Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	1 session					
Boß 2018	Intervention	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Yes	5 sessions/5 weeks					
	Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	1 session					
Brendryen 2017	Intervention	No	No	No	No	No	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	1 session					
	Other intervention	No	No	No	No	No	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	1 session					
Collins 2014	Intervention	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	Yes	1 session					
	Other intervention	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	1 session					
	Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	1 session					
Cunningham 2009	Intervention	Yes	Yes	No	No	No	No	Yes	No	No	No	No	No	No	No	No	Yes	No	No	Yes	1 session					
	Other intervention	Yes	Yes	No			No	Yes	No	No	No	No	No	No	No	No	No	No	No	Yes	1 session					
Doumas 2011	Intervention	Yes	Yes	Yes	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	1 session/30mins					
	Other intervention	Yes	Yes	Yes	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No	1 session					
Epton 2014	Intervention	Yes	Yes	No	No	No	No	No	No	No	Yes	No	Yes	No	No	No	Yes	Yes	No	Yes	4 weeks					
	Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	1 session					
Hester 2012	Intervention	Yes	Yes	No	Yes	No	No	Yes	Yes	No	No	No	Yes	No	No	No	Yes	No	No	Yes	1 session/35mins					
	Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	1 session					
LaBrie 2013	Intervention	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	1 session					
	Other intervention	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	1 session					
	Active control	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	1 session					
Norman 2018	Intervention	Yes	No	No	No	Yes	No	Yes	Yes	No	Yes	No	Yes	No	No	No	Yes	No	No	No	1 session					
	Other intervention	Yes	No	No	No	No	No	Yes	Yes	No	Yes	No	No	No	No	No	Yes	No	No	No	1 session					
	Active control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No	No	No	1 session					
	Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	1 session					
Schulz 2013	Intervention	Yes	Yes	No	No	No	No	No	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes	3 sessions					
	Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	1 session					
Walters 2009	Intervention	Yes	Yes	Yes	No	Yes	No	Yes	Yes	No	No	No	No	No	No	No	No	No	No	No	1 session/30mins					
	Other intervention	Yes	Yes	Yes	No	Yes	No	Yes	Yes	No	No	No	No	No	No	No	Yes	No	No	No	1 session plus 1 inte					
	Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	1 session					
Crombie 2018	Intervention	No	No	No	No	No	Yes	Yes	Yes	No	No	No	Yes	No	Yes	No	No	No	No	No	112 msgs/3 months					
	Active control	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No	No	Yes	No	No	89 msgs/3 months					
Suffoletto 2015	Intervention	No	Yes	No	No	No	No	Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes	12 weeks/twice a week					
	Other intervention	No	No	No	No	No	No	Yes	No	No	No	Yes	No	No	No	No	No	No	No	No	12 weeks/once a week					
	Control	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	1 session					
Haug 2017	Intervention	Yes	Yes	No	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No	No	Yes	No	Yes	1/week					
	Other intervention	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	No	No	1/week					
																					Key:					
																					Most effective	Equivalent	Ineffective	No data		