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Social norms information for alcohol misuse in university and college students (Review)

Foxcroft DR, Moreira MT, Almeida Santimano NML, Smith LA

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[Intervention Review]

Social norms information for alcohol misuse in university and college students

David R Foxcroft[1], Maria Teresa Moreira[2], Nerissa ML Almeida Santimano[1], Lesley A Smith[1]

[1]Department of Psychology, Social Work and Public Health, Oxford Brookes University, Oxford, UK. [2]Universidade Fernando Pessoa, Porto, Portugal

Contact address: David R Foxcroft, Department of Psychology, Social Work and Public Health, Oxford Brookes University, Marston Road, Jack Straws Lane, Marston, Oxford, England, OX3 0FL, UK. david.foxcroft@brookes.ac.uk.

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ABSTRACT

Background

Drinking is influenced by youth perceptions of how their peers drink. These perceptions are often incorrect, overestimating peer drinking norms. If inaccurate perceptions can be corrected, young people may drink less.

Objectives

To determine whether social norms interventions reduce alcohol-related negative consequences, alcohol misuse or alcohol consumption when compared with a control (ranging from assessment only/no intervention to other educational or psychosocial interventions) among university and college students.

Search methods

The following electronic databases were searched up to July 2015: the Cochrane Central Register of Controlled Trials (CENTRAL) (*The Cochrane Library*), MEDLINE, EMBASE, PsycINFO. The Cumulative Index to Nursing and Allied Health Literature (CINAHL) only to March 2008. Reference lists of included studies and review articles were manually searched. No restriction based on language or date was applied.

Selection criteria

Randomised controlled trials or cluster-randomised controlled trials that compared a social normative intervention versus no intervention, alcohol education leaflet or other 'non-normative feedback' alcohol intervention and reported on alcohol consumption or alcohol-related problems in university or college students.

Data collection and analysis

We used standard methodological procedures as expected by Cochrane. Each outcome was analysed by mode of delivery: mailed normative feedback (MF); web/computer normative feedback (WF); individual face-to-face normative feedback (IFF); group face-to-face normative feedback (GFF); and normative marketing campaign (MC).

Main results

A total of 70 studies (44,958 participants) were included in the review, and 63 studies (42,784 participants) in the meta-analyses. Overall, the risk of bias assessment showed that these studies provided moderate or low quality evidence.

Outcomes at four or more months post-intervention were of particular interest to assess when effects were sustained beyond the immediate short term. We have reported pooled effects across delivery modes only for those analyses for which heterogeneity across delivery modes is not substantial (I^2 < 50%).

Alcohol-related problems at four or more months: IFF standardised mean difference (SMD) -0.14, 95% confidence interval (CI) -0.24 to -0.04 (participants = 2327; studies = 11; moderate quality evidence), equivalent to a decrease of 1.28 points in the 69-point alcohol problems scale score. No effects were found for WF or MF.

Binge drinking at four or more months: results pooled across delivery modes: SMD -0.06, 95% CI -0.11 to -0.02 (participants = 11,292; studies = 16; moderate quality evidence), equivalent to 2.7% fewer binge drinkers if 30-day prevalence is 43.9%.

Drinking quantity at four or more months: results pooled across delivery modes: SMD -0.08, 95% CI -0.12 to -0.04 (participants = 21,169; studies = 32; moderate quality evidence), equivalent to a reduction of 0.9 drinks consumed each week, from a baseline of 13.7 drinks per week.

Drinking frequency at four or more months**:** WF SMD -0.11, 95% CI -0.17 to -0.04 (participants = 9929; studies = 10; moderate quality evidence), equivalent to a decrease of 0.17 drinking days/wk, from a baseline of 2.74 days/wk; IFF SMD -0.21, 95% CI -0.31 to -0.10 (participants = 1464; studies = 8; moderate quality evidence), equivalent to a decrease of 0.32 drinking days/wk, from a baseline of 2.74 days/wk. No effects were found for GFF or MC.

Estimated blood alcohol concentration (BAC) at four or more months: peak BAC results pooled across delivery modes: SMD -0.08, 95% CI -0.17 to 0.00 (participants = 7198; studies = 11; low quality evidence), equivalent to a reduction in peak BAC from an average of 0.144% to 0.135%. No effects were found for typical BAC with IFF.

Authors' conclusions

The results of this review indicate that no substantive meaningful benefits are associated with social norms interventions for prevention of alcohol misuse among college/university students. Although some significant effects were found, we interpret the effect sizes as too small, given the measurement scales used in the studies included in this review, to be of relevance for policy or practice. Moreover, the significant effects are not consistent for all misuse measures, heterogeneity was a problem in some analyses and bias cannot be discounted as a potential cause of these findings.

PLAIN LANGUAGE SUMMARY

Social norms interventions are not effective enough on their own to reduce alcohol use or misuse among university or college students

Background: Drinking is influenced by youth perceptions of how their peers drink. These perceptions are often incorrect, overestimating peer drinking norms. If inaccurate perceptions can be corrected, with social norms information or feedback, young people may drink less.

Search date: To July 2015.

Study characteristics: 70 studies were included in this review, with 44,958 students overall. We were interested mainly in studies with a follow-up period of four or more months to assess whether any effects were sustained beyond the immediate short term. In 43 of the trials, the social norms intervention was targeted at higher-risk students. 55 trials were conducted in the USA, with others form Australia, Brazil, New Zealand, Sweden and the United Kingdom.

Delivery of social norms information included mailed feedback, web/computer feedback, individual face-to-face feedback, group face-to-face feedback and general social norms marketing campaigns across college campuses.

Key findings

Over the longer-term, after four or more months of follow-up, there was only a small effect of social norms information on binge drinking, drinking quantity, and peak BAC. For these outcomes, effects were not any different across the different delivery modes.Only

small effects were found for web feedback and individual face-to-face feedback on frequency of alcohol consumed. Only a small effect of individual face-to-face feedback on alcohol related problems, but no effects were found for mailed or web feedback. Similarly, no effects were found for group face-to-face feedback or for marketing campaigns on frequency of alcohol consumed and typical BAC.

Our reading of these results is that, although we found some significant effects of social norms information, the strength of the effects over the longer-term is very small and therefore this information is unlikely to provide any advantage in practice.

Quality of the evidence

Overall, only low or moderate quality evidence was noted for the effects reported in this review. Problems with study quality could result in estimates of social norms effects that are too high, so we cannot rule out the chance that the effects observed in this review may be overstated.

The U.S. National Institutes of Health provided funding for just under half (33/70) of the studies included in this review. Eighteen studies provided no information about funding, and only 13 papers had a clear conflict of interest statement.

SUMMARY OF FINDINGS FOR THE MAIN COMPARISON [Explanation]

Social norms information compared with controls for prevention of alcohol misuse

Patient or population: university or college students
Settings: college or university settings
Intervention: social norms information (personalised feedback or information campaigns); by delivery mode if subgroup differences were noted between different delivery modes (mailed normative feedback; web/computer feedback; individual face-to-face feedback; group face-to-face feedback)
Comparison: no intervention (assessment only or alcohol information or alternative (non-normative) intervention)
Follow-up: 4+ months
Measurement: self-reported alcohol consumption (questionnaire scale)

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	Number of participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
Alcohol-related problems: 4+ months-web/computer normative feedback	Mean alcohol problems scale score was 8.91 in the control group, with a standard deviation of 9.17 (the 69-point RAPI scale was used by Martens 2013)	The SMD from the meta-analysis (-0.04) will result in a decrease of 0.37 in the alcohol problems scale score (95% CI 0.18 to 1.00), from an average of 8.91 to 8.54, based on Martens 2013	(SMD -0.04, 95% CI -0.11 to 0.02)	11,767 (15)	⊕⊕◯◯ **Low**	Limitations in design and implementation, especially blinding and in some studies high risk of attrition bias (loss to follow-up). Borderline substantial heterogeneity (I^2 = 51%)
Alcohol-related problems: 4+ months-individual face-to-face normative feedback	Mean alcohol problems scale score was 8.91 in the control group, with a standard deviation of 9.17 (the 69-point RAPI scale was used by Martens 2013)	The SMD from the meta-analysis (-0.15) will result in a decrease of 1.28 in the alcohol problems scale score (95% CI 0.37 to 2.20), from an average of 8.91 to 7.63, based on Martens 2013	(SMD -0.14, 95% CI -0.24 to -0.04)	2327 (11)	⊕⊕⊕◯ **Moderate**	Limitations in design and implementation, especially blinding and in some studies high risk of attrition bias (loss to follow-up)

Binge drinking: 4+ months (all delivery modes)	43.9% of control group participants were binge drinkers, defined as those who drink above recommended limits for acute risk (> 40 g/ > 60 g ethanol on 1 occasion in the preceding 4 weeks for women and men, respectively) in a study by Kypri 2014	The SMD from the meta-analysis (-0.06) will result in 2.7% fewer binge drinkers (95% CI 0.9% to 4.8%), from 43. 9% to 41.2%, based on Kypri 2014	(SMD -0.06, 95% CI -0. 11 to -0.02)	11,292 (16)	⊕⊕⊕○ **Moderate**	Limitations in design and implementation, especially blinding and in some studies high risk of attrition bias (loss to follow-up)
Quantity of drinking: 4+ months (all delivery modes)	Mean number of drinks per week was 13.74 in the control group, with a standard deviation of 10.77, from the DDQ measure in Martens 2013	The SMD from the meta-analysis (-0.08) will result in a decrease of 0.9 drinks consumed each week (95% CI 0.4 to 1.3), from an average of 13.7 drinks per week to 12.8 drinks per week, based on Martens 2013	(SMD -0.08, 95% CI -0. 12 to -0.04)	21,169 (32)	⊕⊕⊕○ **Moderate**	Limitations in design and implementation, especially blinding and in some studies high risk of attrition bias (loss to follow-up)
Frequency: 4+ months-web/computer normative feedback	Mean number of drinking days per week was 2.74 in the control group, with a standard deviation of 1.54, from the DDQ measure in Martens 2013	The SMD from the meta-analysis (-0.11) will result in a decrease of 0.17 drinking days per week (95% CI 0.06 to 0.26), from an average of 2.74 drinking days per week to 2.57 drinking days per week, based on Martens 2013	(SMD -0.11, 95% CI -0. 17 to -0.04)	9929 (10)	⊕⊕⊕○ **Moderate**	Limitations in design and implementation, especially blinding and in some studies high risk of attrition bias (loss to follow-up)
Frequency: 4+ months-individual face-to-face normative feedback	Mean number of drinking days per week was 2.74 in the control group, with a standard	The SMD from the meta-analysis (-0.21) will result in a decrease of 0.32 drinking days	(SMD -0.21, 95% CI -0. 31 to -0.10)	1464 (8)	⊕⊕⊕○ **Moderate**	Limitations in design and implementation, especially blinding and in some studies high

	deviation of 1.54, from the DDQ measure in Martens 2013	per week (95% CI 0.15 to 0.48), from an average of 2.74 drinking days per week to 2.42 drinking days per week, based on Martens 2013			risk of attrition bias (loss to follow-up)
Frequency: 4+ months-group face-to-face normative feedback	Mean number of drinking days per week was 2.74 in the control group, with a standard deviation of 1.54, from the DDQ measure in Martens 2013	The SMD from the meta-analysis (-0.26) will result in a decrease of 0.40 drinking days per week (95% CI 0.03 to 0.83), from an average of 2.74 drinking days per week to 2.34 drinking days per week, based on Martens 2013	(SMD -0.26, 95% CI -0. 54 to 0.02)	449 (5)	⊕⊕◯◯ **Low**	Limitations in design and implementation, especially blinding and in some studies high risk of attrition bias (loss to follow-up). Substantial heterogeneity (I^2 = 55%)
Peak BAC: 4+ months (all delivery modes)	Mean peak BAC was 0.144% in the control group, with a standard deviation of 0.111, from Martens 2013	The SMD from the meta-analysis (-0.08) will result in a decrease of 0.009 for peak BAC (95% CI 0.000 to 0.019), from an average of 0. 144% to 0.135%, based on Martens 2013	(SMD -0.08, 95% CI -0. 17 to 0.00)	7198 (11)	⊕⊕◯◯ **Low**	Limitations in design and implementation, especially blinding and in some studies high risk of attrition bias (loss to follow-up). Borderline substantial heterogeneity (I^2 = 50%)
Typical BAC: 4+ months-individual face-to-face normative feedback	Mean typical BAC was 0.08% in the control group, with a standard deviation of 0.048, from Schaus 2009	The SMD from the meta-analysis (-0.08) will result in a decrease of 0.004 for typical BAC (95% CI -0.005 to 0.013), from an average of 0. 080% to 0.076%, based on Schaus 2009	(SMD -0.08, 95% CI -0. 26 to 0.10)	490 (4)	⊕⊕⊕◯ **Moderate**	Limitations in design and implementation, especially blinding and in some studies high risk of attrition bias (loss to follow-up)

*The basis for the **assumed risk** is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
BAC: Blood alcohol concentration; **CI:** Confidence interval; **SMD:** Standardised mean difference; **DDQ:** daily drinking questionnaire; **RAPI:** Rutgers Alcohol Problem Index (frequency of occurrence of 23 problems from "None" (scored 0) to "More than 5 times" (scored 3) to give a range of scores from 0 to 69)

GRADE Working Group grades of evidence.
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

In the columns illustrating comparative risks: for outcomes where the pooled analysis point estimate and confidence interval showed some effect, we have used results (mean scores and standard deviations) from Martens 2013 to illustrate the effect sizes in terms of the measures used in that study. We chose Martens 2013 because the outcome measures they use are well-known, generally well regarded, and are typical of the measures used in this field of research: they used the Daily Drinking Questionnaire (DDQ) and the Rutgers Alcohol Problem Index (RAPI).

BACKGROUND

Description of the condition

Alcohol misuse

A total of 2.5 million deaths and 58.3 million disability-adjusted life-years (DALYs) each year are caused by the harmful use of alcohol worldwide (World Health Organization 2011). In all, 9% of deaths among young people between the ages of 15 and 29 are due to alcohol-related events (World Health Organization 2011). Accidental injuries are responsible for about one-third of alcohol-related deaths, and neuropsychiatric conditions are responsible for nearly 40% of the 58.3 million DALYs (World Health Organization 2011).

The European Union (EU) is the heaviest drinking region of the world, with the equivalent of 11 litres of pure alcohol taken per adult each year (Anderson 2006). More than one of four deaths among young men (aged 15 to 29 years) and one of every 10 deaths among young women in the EU are alcohol related (World Health Organization 2011). Young people (aged 15 to 24 years) contribute a high proportion to this burden, with more than 25% of young male mortality and approximately 10% of young female mortality due to alcohol (Anderson 2006). Some information is also available on the extent of social harm among young people, for example, a third of a million 15- to 16-year-old students in the EU report engaging in fights, and 200,000 report unprotected sex due to their own drinking (Anderson 2006).

Alcohol consumption and related problems have been widely studied in university and college students in the USA (Hingson 2005; Wechsler 1994). Drinking patterns of university students in Europe and in other parts of the world have been studied less In comparison (Karam 2007).

Research suggests that university students drink more than their non-university peers (Carter 2010; Dawson 2004; Kypri 2005). Whilst non-university peers drink more frequently, university students tend to drink excessively when they do drink (O' Malley 2002). A study of tertiary students living in halls of residence in New Zealand showed that 60% of males and 58% of females typically drank amounts that exceed the national safe drinking guidelines (Kypri 2002). A survey of alcohol and drug use among UK-based dental undergraduates revealed that 63% of male students and 42% of female students drank amounts that exceed the national safe drinking guidelines (Underwood 2000). In a review paper, Carter 2010 reported that college students tend to be at greater risk for alcohol-related problems, including alcohol abuse and alcohol dependence, than their non-college peers. A US National Institutes of Health briefing paper on college drinking reported that almost 60% of college students aged 18 years to 22 years drank alcohol, and almost two-thirds had been binge drinkers in the past month (NIAAA 2015).

Description of the intervention

Two different types of norms can be applied: injunctive and descriptive norms. The first type (injunctive social norms) is related to a person's viewpoint of what he or she thinks is right based on personal beliefs or morals. The second type (descriptive social norms) refers to perceptions of what is usually done by others and is the typical focus of social norms interventions. Social norms interventions can be universal or targeted and are classed as informational prevention according to the form and function classification system used for prevention interventions (Foxcroft 2014a; Foxcroft 2014b).

Descriptive social norms (hereafter referred to as social norms) interventions have typically come in one of two forms: social marketing of normative information, or normative feedback to individuals or small groups. Social marketing approaches rely on universal mass communications methods for educating students regarding actual drinking behaviours. Although social marketing approaches provide the advantage of reaching a larger audience, they can be costly and are limited by the fact that they are relatively impersonal and assume that students will both see and carefully process the information (Walters 2000).

Personalised normative feedback interventions provide students with information about actual student drinking norms. Feedback also provides comparisons between actual student drinking patterns and perceptions of the norm (Lewis 2006), pointing out discrepancies. A personal drinking profile is typically given to each student via email, by letter or in person along with information about quantity of alcohol consumption, money spent on alcohol, calorie intake, risk factors, negative consequences and normative comparisons (e.g. beliefs about peers' drinking, amount consumed in relation to peers). Normative feedback can be given as a stand-alone intervention or as an adjunct to an individual or group counselling session. Normative feedback is usually given as a substantive part of an intervention that also comprises standard information on alcohol consumption and the risks associated with misuse.

How the intervention might work

Social norms interventions are predicated on how an individual's perceptions and beliefs about what constitutes 'normal' behaviour in similar people influence their own behaviour (Berkowitz 2005; Perkins 2003). So, for example, if an individual believes that his or her peers drink heavily, this influences the amount of alcohol that that individual drinks. The extent of contact that an individual has with the peer or reference group and how closely he or she identifies with the group can affect how much the perceived group norm influences the individual.

Research consistently shows that college and university students typically perceive peer norms incorrectly by overestimating the amount of alcohol consumed by peers (Mcalaney 2007; Perkins 1996; Perkins 2007). It is important to note that high levels of

overestimated peer norms were shown to be associated with greater personal alcohol consumption (Mcalaney 2007; Perkins 1996; Perkins 2007). Use of social norms theory in applied prevention and intervention work relies on the fact that much of peer influence is due to incorrect perceptions of peer group attitudes and behaviours. Social norms-based interventions aim to provide accurate information about prevailing norms for alcohol use, reducing the possibility of inaccurate perceptions.

Why it is important to do this review

If health professionals, prevention specialists, colleges and universities are to implement social norms interventions in practice, clear evidence on effectiveness and longer-term sustained benefit is required, especially regarding effects on hazardous and harmful drinking amongst university and college students. Alcohol availability and marketing promote alcohol consumption and this pro-alcohol messaging undoubtedly influences social norms for college student drinking. It is reasonable to suggest that public health attempts to bend social norms in the opposite direction would be a logical strategy to employ. Given the resources put behind alcohol availability and marketing campaigns it is important to know whether social norms interventions are having any impact to counter pro-alcohol availability and messaging.

A few reviews have focused on social norms interventions (Bewick 2008b; Walters 2004): Bewick 2008b reviewed the published literature on the effectiveness of web-based interventions in reducing alcohol consumption or preventing alcohol abuse, or both and concluded that evidence on the effectiveness of screening and brief intervention (eSBI) for alcohol use was inconsistent. Walters 2004 reviewed published studies that used feedback as the main component of an alcohol intervention for college students. Feedback appeared to change normative perceptions of drinking and was possibly more effective among students who drink for social reasons. The addition of an individual counselling or group session did not seem to increase the short-term effect of the feedback. One (Tanner-Smith 2015) reported that brief interventions led to significant reductions in alcohol consumption and alcohol-related problems in adolescents and young adults, and that motivational interviewing was associated with larger effects than some other types of interventions. Social norms feedback was not distinguished from other forms of brief intervention in this review. In another review (Huh 2015) also reviewed brief interventions and undertook post-hoc comparisons of different intervention types. They found that personalised feedback on its own did not show an effect when compared with control.

OBJECTIVES

To determine whether social norms interventions reduce alcohol-related negative consequences, alcohol misuse or alcohol consumption when compared with a control (ranging from assessment only/no intervention to other educational or psychosocial interventions) among university and college students.

METHODS

Criteria for considering studies for this review

Types of studies

We included all randomised controlled trials with individual or cluster designs.

Types of participants

We considered trials that included students from university or college settings.

Types of interventions

- Universal personalised normative feedback to individuals in cases where all students are asked to participate regardless of drinking status or risk level.
- Targeted interventions focused on members of a particular group, such as fraternity and sorority members, athletes or individuals deemed to be at higher risk for alcohol problems.
- Social norms marketing campaigns (e.g. community-wide electronic or print media campaigns, or both) that refer to normative drinking patterns.

Control intervention

- Interventions with no social norms component including no intervention or minimal intervention in the form of a leaflet, or an educational or psychosocial intervention without a social norms component.

Types of outcome measures

The following primary and secondary outcome measures were of interest.

Primary outcomes

Self-reported measures of alcohol-related problems using a validated scale such as the Rutgers Alcohol Problem Index (RAPI), which typically includes questions regarding the following.

- Adverse legal events as a consequence of alcohol (i.e. violence, driving offences).
- Inappropriate risky behaviours (e.g. sex without use of condom) related to alcohol use.
- Alcohol-related injuries.

- Illicit drugs consumption (e.g. marijuana, cocaine) associated with alcohol use.

Alcohol use documented by self-reported measures of the following.

- Binge drinking or heavy episodic drinking (e.g. four or more drinks for women, five or more drinks for men, on a drinking occasion).
- Alcohol consumption (quantity): measured in terms of the number of drinks/units consumed over a specific period. When more than one measure of consumption was reported, for the purpose of meta-analysis weekly consumption was the outcome of preference when provided. Tools typically used to measure quantity of consumption include a daily drinking questionnaire (DDQ) and quantity-frequency scale(s).
- Alcohol consumption (frequency), typically frequency of consumption during the past 30- or seven-day period.
- Peak blood alcohol content (peak BAC) calculated using a formula based on consumption, gender and weight.
- Typical BAC calculated using a formula based on consumption, gender and weight.

Secondary outcomes

- Drinking norms measured using validated scales such as the drinking norms rating form. When perceived peer use of alcohol was reported in terms of both quantity and frequency, only the quantity measure was included in the meta-analysis.

Search methods for identification of studies

Electronic searches

Databases searched included the following.

1. Cochrane Central Register of Controlled Trials (CENTRAL) (*The Cochrane Library*) (issue 7, 2015).
2. Ovid MEDLINE (January 1966 to March 2008, and March 2008 to July 2015 for review update).
3. Ovid EMBASE (January 1988 to March 2008, and March 2008 to July 2015 for review update).
4. Ovid PsycINFO (1985 to March 2008, and March 2008 to July 2015 for review update).
5. Ovid Cumulative Index to Nursing and Allied Health Literature (CINAHL) (1982 to March 2008 only).
6. Cochrane Drugs and Alcohol Group Register of Trials (up to 2008 only); searched using the following terms: diagnosis = alcohol and intervention = social norms. The Cochrane Drugs and Alcohol Group Register of Trials has been merged with CENTRAL; therefore the search on CENTRAL up to July 2015 covers both registers.

To identify the studies included in this review and in the previous review (Moreira 2009), the same detailed search strategies were used for each database searched (Moreira 2009). These strategies were based on the search strategy developed for MEDLINE but were revised appropriately for each database to account for differences in controlled vocabulary and syntax rules. The search strategies are available in Appendix 1, Appendix 2 and Appendix 3.

Searching other resources

Unpublished reports, abstracts, briefs and preliminary reports were considered for inclusion on the same basis as published reports. No restriction based on language or date was applied. Reference lists of studies included in the update were manually searched.

Data collection and analysis

Selection of studies

Two out of three review authors (NS, TM, DF) read all titles or abstracts, or both resulting from the search process and eliminated obviously irrelevant studies. We obtained full copies of the remaining potentially relevant studies. Two out of three review authors (NS, TM, DF), acting independently, classified these as "clearly relevant", "meets all inclusion criteria therefore include", "clearly irrelevant therefore exclude", or "insufficient information to make a decision" whereby we contacted the study authors to ask for further information to aid the decision process. We based decisions on inclusion criteria (i.e. types of studies, types of participants, interventions and outcome measures used) and resolved differences in opinionthrough consensus or by referral to a third review author. We increased the amount of available information for each studyby using all companion publications.

Data extraction and management

Two out of three review authors (NS, TM, DF) independently extracted data from study sources using a data extraction form and then compared forms. The data extraction form collected information on study design, target population, reported outcomes, age, type of intervention and comparison, setting, inclusion/exclusion criteria, risk of bias, number eligible/recruited, risk of bias, and relevant results. When differences occurred, we resolved them through discussion, and, if necessary, by discussion with a third review author. When required, we obtained additional information by contacting the original study authors. We entered information from the data extraction forms into the Cochrane software programme, Review Manager version 5.3 (RevMan 2014) .

Assessment of risk of bias in included studies

We followed the recommended approach for assessing risk of bias in studies included in Cochrane reviews (see Appendix 4) based on evaluation of six specific methodological domains: (1) random

sequence generation, (2) allocation concealment, (3) blinding of participants and personnel, (4) blinding of outcome assessors, (5) incomplete outcome data and (6) selective outcome reporting. For each study, the six domains were appraised and described as reported in the study, and a final judgement on the likelihood of bias was provided. This was achieved by using the 'Risk of bias' tool when a judgement of 'high risk' of bias, 'low risk' of bias or 'unclear risk' of bias was made for each of the domains in each included study. To make these judgements, we used the criteria indicated by the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011a). In addition, for the domain of incomplete outcome data, we regarded attrition rates greater than 20% at final follow-up as presenting high risk of bias, and rates of 20% or less with no evidence of differential attrition as showing low risk of bias.

Measures of treatment effect

Study follow-up periods were *a priori* and arbitrarily categorised as follows: short-term follow-up, defined as data collected up to three months after the intervention; and longer-term follow-up, defined as data collected four or more months after the intervention. For some meta-analysis effect sizes, we have calculated and reported the proportions of students in the intervention condition for which outcome score was changed, based on conversion of the standardised mean difference (SMD) into a Z score and expressed as a percentage (%) of participants with changed (typically decreased) scores. When possible, we have calculated from the SMD point estimate the reduction in outcome score; to do this, we used the standard deviation (SD) for each outcome measure from large sample studies: Carey 2004 (N = 391) (RAPI: SD 0.62; peak BAC: SD 0.11; frequency-quantity questionnaire: SD 3 for frequency and SD 11.3 for quantity; binge drinking self-report questionnaire: SD 4.4; DeJong 2006 (N = 2921) (drinking norms questionnaire: SD 3.6); and Carey 2011 (typical BAC: SD 0.6).

In the original review (Moreira 2009), heterogeneity of studies was problematic, making pooling of effects across delivery modes more difficult to interpret, so no pooled effects across delivery types were calculated. In this updated review, we have pooled effects across delivery modes only for those analyses for which heterogeneity across delivery modes is not substantial (I^2 < 50%).

Assessment of heterogeneity

We considered heterogeneity test results alongside a qualitative assessment of the combinability of studies in this review. Heterogeneity was regarded as problematic if I^2 was substantial ($\geq$ 50%) (Deeks 2011).

Assessment of reporting biases

We assessed publication bias by constructing funnel plots for outcomes examined by a reasonable number of trials. Plots were visually inspected and were interpreted for potential risk of publication bias (Egger 1997).

Data synthesis

When possible we combined outcome measures from individual trials through meta-analysis (comparability of interventions and outcomes between trials) using a random-effects model. When heterogeneity was substantial (I^2 > 50%), we report the pooled result but provide a note of caution regarding interpretation of the pooled result. To include studies that met the inclusion criteria but did not present means and standard deviations in their final results, we used the generic inverse variance method. We analysed studies by follow-up period (short-term: up to three months; and longer-term: four or more months) and subgrouped them by delivery mode. We tested for subgroup differences; when these were statistically significant, we pooled data within each delivery mode. If subgroup differences were not found, we pooled data across delivery modes. Our a priori hypothesis was that effectiveness would vary by delivery mode. When this hypothesis was rejected according to statistical analysis, we pooled across delivery modes.

Subgroup analysis and investigation of heterogeneity

The original review (Moreira 2009) analysed gender-specific feedback for male and female subgroups. These analyses showed that effects for males and females were very similar, and the original review concluded that no evidence showed that gender-specific interventions were more efficient than general social norms interventions. In this updated review, we have not analysed normative feedback by gender. As in the original review, we grouped social norms interventions into five subtypes, representing alternative delivery modes: (1) mailed feedback; (2) computer/web feedback; (3) individual face-to-face feedback; (4) group face-to-face feedback; and (5) social marketing campaign.

Sensitivity analysis

When clear and notable concerns about methods or analysis were reported in studies included in this review, we assessed the contributions of these studies to pooled effects in a sensitivity analysis by removing them from the meta-analysis.

One study (McNally 2003) reported outcomes for a subgroup analysis of "at-risk drinkers" after randomisation. It was not clear whether this was a planned subgroup analysis, and no stratification by subgroup was undertaken in the design of the study. Sample sizes in subgroup analyses are frequently small; subgroup analyses therefore can lack statistical power. These analyses are also subject to the multiple comparison problem, and if not stratified, a comparison is not truly randomised. We performed sensitivity analysis for group face-to-face feedback by excluding McNally 2003.

Concerns about differential attrition (Lovecchio 2010) led us to perform sensitivity analyses for relevant outcomes by removing this study.

'Summary of findings' tables

We have used the GRADE (Grades of Recommendation, Assessment, Development and Evaluation) method to produce a 'Summary of findings' (SoF) table for studies with longer-term follow-up (four or more months), as these are of greater interest when the sustainability of intervention effects is considered (Schünemann 2011). Only analyses with at least four studies in the pooled analysis are included in the SoF table.

The Grading of Recommendation, Assessment, Development and Evaluation Working Group (GRADE) developed a system for grading the quality of evidence (GRADE 2004; Guyatt 2008; Guyatt 2011; Schunemann 2006) which takes into account issues not only related to internal validity but also to external validity, such as directness of results. The 'Summary of findings' tables present the main findings of a review in a transparent and simple tabular format. In particular, they provide key information concerning the quality of evidence, the magnitude of effect of the interventions examined and the sum of available data on the main outcomes.

The GRADE system uses the following criteria for assigning grades of evidence.

- High: further research is very unlikely to change our confidence in the estimate of effect.
- Moderate: further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
- Low: further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
- Very low: any estimate of effect is very uncertain.

Grading is decreased for the following reasons.

- Serious (-1) or very serious (-2) limitation to study quality.
- Important inconsistency (-1).
- Some (-1) or major (-2) uncertainty about directness.
- Imprecise or sparse data (-1).
- High probability of reporting bias (-1).

Grading is increased for the following reasons:

- Strong evidence of association - significant relative risk of > 2 (< 0.5) based on consistent evidence from two or more observational studies, with no plausible confounders (+1).
- Very strong evidence of association - significant relative risk of > 5 (< 0.2) based on direct evidence with no major threats to validity (+2).
- Evidence of a dose response gradient (+1).
- All plausible confounders would have reduced the effect (+1).

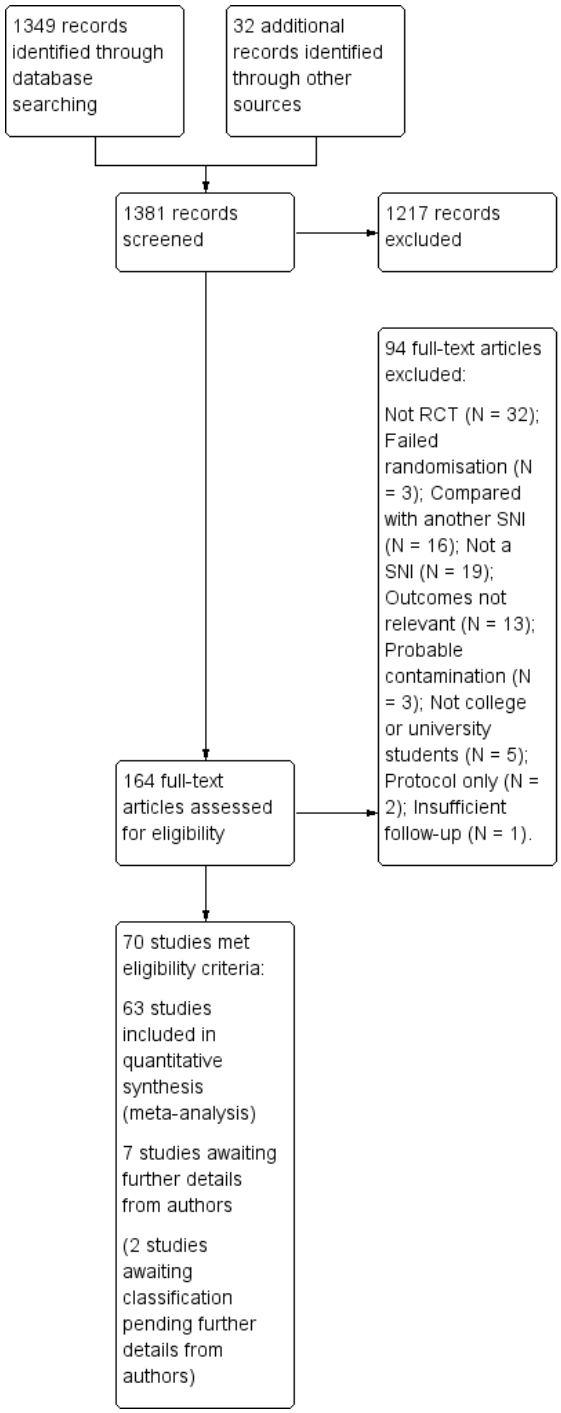
RESULTS

Description of studies

Results of the search

Of 1381 records identified through database searching (N = 1349) and from other sources (e.g. following up on reference lists from included studies (N = 32)), we identified 164 studies that initially appeared to meet our inclusion criteria. These studies were acquired in full text for more detailed evaluation. A total of 94 studies were excluded for a variety of reasons (see Figure 1), and 70 studies (44,958 participants) met the eligibility criteria for inclusion in this review. Two studies are awaiting classification (Croom 2009; Whiteside 2010) (see Characteristics of studies awaiting classification).

Figure 1. Study flow diagram.



A total of 63 studies (42,784 participants) were included in the quantitative synthesis (meta-analysis), and seven studies (2174 participants; Amaro 2009; Bewick 2013; Bryant 2009; Neighbors 2011; Palfai 2011; Wood 2007; Wood 2010) are pending further information from study authors before they can be included in the quantitative synthesis. Two additional studies (Croom 2009; Whiteside 2010) are pending further information from study authors before they can be classified as eligible or ineligible for inclusion in this review.

One paper reported two separate trials: one with mandated students and one with voluntary students, with a separate randomised control group included for each intervention arm. Therefore for the purposes of this review and meta-analysis, we have classified this paper as comprising two studies (Terlecki 2010 Mandated; Terlecki 2010 Voluntary).

Included studies

General characteristics of selected trials and methods used for the intervention are summarised in the Characteristics of included studies table.

Of the 70 included studies, 43 targeted students at increased risk, typically indicated by a higher score on a screening measure (N = 33 studies), a mandate to attend an intervention for violation of campus alcohol policy (N = 6 studies: Borsari 2005; Carey 2006; Carey 2011; Doumas 2009a; LaChance 2009; Terlecki 2010 Mandated), increased depression scores (N = 1 study: Geisner 2007); attendance at spring break festivities (Patrick 2014) or membership in a fraternity (N = 2 studies: Larimer 2001; Wilke 2014).

A total of 26 studies provided universal interventions and recruited from all available students: Bendtsen 2012; Bewick 2008a; Bewick 2010; Bewick 2013; Bryant 2009; Bryant 2013; Carey 2006; DeJong 2006; DeJong 2009; Doumas 2008a; Doumas 2009b; Henslee 2009; Larimer 2001; Lewis 2008; Lovecchio 2010; McNally 2003; Michael 2006; Moore 2013; Moreira 2012; Neighbors 2009; Palfai 2011; Paschall 2011; Pederson 2012; Terlecki 2010 Voluntary; Wood 2007; Wood 2010). One study was aimed at low-risk students (Neighbors 2011).

Most (55/70) studies were conducted in the USA, with the exception of 15 studies, which were conducted in Australia (Kypri 2009; Ridout 2014), Brazil (Simão 2008), New Zealand (Kypri 2004; Kypri 2005; Kypri 2008; Kypri 2013; Kypri 2014), Sweden (Bendtsen 2012; Ekman 2011) and the United Kingdom (Bewick 2008a; Bewick 2010; Bewick 2013; Moore 2013; Moreira 2012).

Controls received no intervention (i.e. assessment only (51 studies)), brief alcohol-relevant information (11 studies: Bryant 2013; Collins 2002; Ekman 2011; Geisner 2007; Henslee 2009; Kypri 2004; Kypri 2008; LaChance 2009; Larimer 2001; Neal 2004; Schaus 2009) or an alternative alcohol educational intervention that did not involve normative feedback (eight studies: Borsari 2005; Bryant 2009; Doumas 2008a; Doumas 2009a; Martens 2013; Murphy 2001; Patrick 2014; Werch 2000).

Interventions varied from no face-to-face contact session (paper or web feedback) to one or two face-to-face contact sessions with duration ranging from 45 minutes (Neal 2004) to 175 minutes (Michael 2006). Some studies involved a booster session after the initial intervention, providing students with personalised normative feedback at later time points (Baer 2001; Marlatt 1998; Neighbors 2010).

Seven outcomes were used in this systematic review to evaluate the effectiveness of social norms interventions that were reported by the included studies: (1) alcohol-related problems; (2) binge drinking, reporting the frequency of heavy drinking; (3) quantity of drinking, reporting the typical number of drinks taken each day of the typical week or number of drinks taken per week in the past month; (4) frequency of drinking, reporting the number of days in the typical week or month that participants drank; (5) calculated peak BAC, reporting the maximum alcohol blood concentration during a usual drinking episode, using the formula [(number of drinks/2) * (9/weight for men or 7.5/weight for women) - (0.016 * hours drinking)]; (6) calculated typical BAC, reporting the typical blood alcohol concentration during a usual drinking episode, using the formula [(number of drinks/2) * (9/weight for men or 7.5/weight for women) - (0.016 * hours drinking)]; and (7) drinking norms, reporting the perceived number of drinks consumed per occasion by a typical student. No gold standard diagnostic measures of alcohol abuse or dependence were reported in any of the studies included in this review.

Follow-up periods of included studies varied from immediate post intervention (e.g. Lewis 2008; Neal 2004; Neighbors 2009) to 12 months (e.g. Carey 2006; Carey 2011; Kypri 2008; Larimer 2001; Lewis 2007b; Moreira 2012; Schaus 2009), 24 months (Marlatt 1998; Neighbors 2010; Simão 2008), 36 months (DeJong 2006; DeJong 2009) or 48 months (Baer 2001).

Excluded studies

A total of 92 studies did not meet our inclusion criteria and are listed in the Characteristics of excluded studies table along with reasons for exclusion (also see Figure 1).

Risk of bias in included studies

See Figure 2 and Figure 3.

Figure 2. Methodological quality graph: review authors' judgements about each methodological quality item presented as percentages across all included studies.

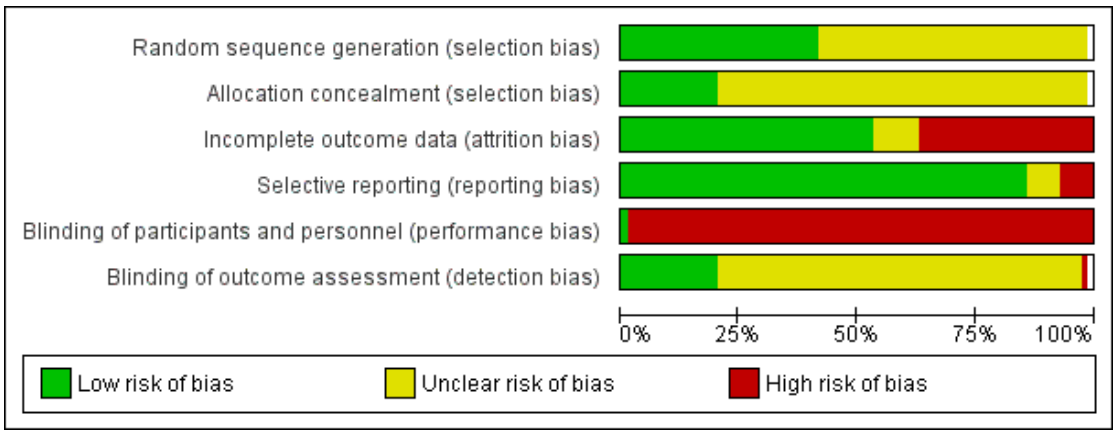
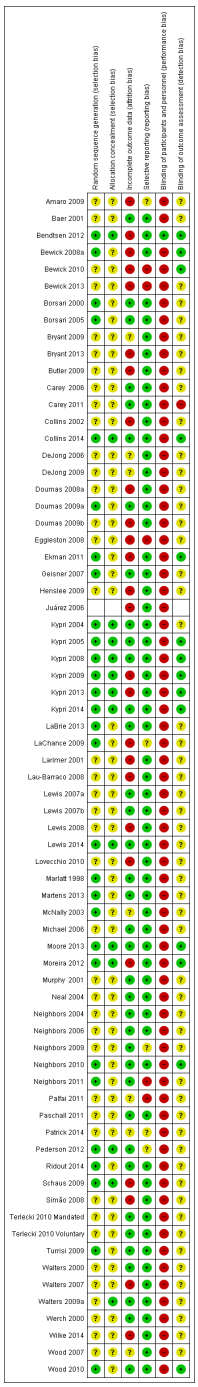


Figure 3. Methodological quality summary: review authors' judgements about each methodological quality item for each included study.



Allocation

All 70 studies were reported to have been randomised. Twenty-eight studies provided adequate information on generation of the random sequence (Bendtsen 2012; Bewick 2008a; Borsari 2000; Borsari 2005; Collins 2014; Doumas 2009a; Ekman 2011; Geisner 2007; Kypri 2004; Kypri 2005; Kypri 2008; Kypri 2009; Kypri 2013; Kypri 2014; LaBrie 2013; LaChance 2009; Lewis 2014; Marlatt 1998; Martens 2013; McNally 2003; Moreira 2012; Neighbors 2010; Neighbors 2011; Pederson 2012; Ridout 2014; Schaus 2009; Turrisi 2009; Wood 2010) and were judged at low risk for this component. Two studies matched participant institutions before randomisation (DeJong 2006; DeJong 2009). All the other studies were judged at unclear risk.

Only 14 studies provided an adequate description of the allocation concealment mechanism (Bendtsen 2012; Collins 2014; Kypri 2004; Kypri 2005; Kypri 2008; Kypri 2009; Kypri 2013; Kypri 2014; Lewis 2014; Moore 2013; Moreira 2012; Pederson 2012; Schaus 2009; Walters 2009a) and were judged to be at low risk for this component. All the other studies were judged at unclear risk.

Blinding

All but one of the studies were classified as having high risk for performance bias (blinding of participants and personnel) because participants were not blinded to the intervention. In one study (Bendtsen 2012), participants were not aware that they were involved in a research study, so they can be regarded as blind to the study condition (low risk).

In 13 studies (Bendtsen 2012; Bewick 2008a; Bewick 2010; Ekman 2011; Kypri 2005; Kypri 2008; Kypri 2009; Kypri 2013; Kypri 2014; Moore 2013; Moreira 2012; Neighbors 2010; Wood 2010), outcome assessment was blinded by not informing outcome assessors of group allocation or by using remote web-based administration of questionnaires, so risk of detection bias was low. In one study (Carey 2011), it was stated that outcome assessors were not blinded, so risk of detection bias was high. The remaining studies did not report on blinding of outcome assessors, so the risk was rated as unclear.

Incomplete outcome data

Losses to follow-up were generally low (under 20%). Thirty-two studies were judged at low risk for attrition bias. Three studies reported no loss to follow-up (Borsari 2005; Michael 2006; Neal 2004) and were regarded as low risk. Three studies did not follow up on individual participants but undertook random sample surveys at intervention and control sites to assess effects of the intervention (DeJong 2006; DeJong 2009; Moore 2013). These studies were classified as having low risk of attrition bias.

Studies with attrition > 20% were regarded as high risk: 14 studies reported attrition rates of between 20% and 40% (Amaro 2009; Bewick 2008a; Butler 2009; Collins 2002; Collins 2014; Doumas 2009b; Juárez 2006; Kypri 2009; Kypri 2013; LaChance 2009; Larimer 2001; Lovecchio 2010; Schaus 2009; Walters 2007), and 11 studies attrition rates over 40% (Bendtsen 2012; Bewick 2010; Bryant 2009; Doumas 2008a; Eggleston 2008; Ekman 2011; Henslee 2009; Lau-Barraco 2008; Lewis 2008; Moreira 2012; Wilke 2014), suggesting high risk of attrition bias.

Lovecchio 2010 reported major differences in follow-up rates between arms of the trial: 91% follow-up in the intervention arm compared with 68% in the control arm and was judged at high risk of bias for this domain.

Selective reporting

Most studies reported results for all outcome measures specified in the Methods sections of papers and were classified as having low risk of reporting bias. Six studies did not report all outcomes and were classified as having high risk of reporting bias (Bewick 2010; Bewick 2013; Eggleston 2008; Neighbors 2011; Palfai 2011; Walters 2009a).

Other potential sources of bias

Adjustment for cluster level effects

Of the 12 cluster-randomised trials, three (LaChance 2009; Moore 2013; Paschall 2011) reported adequate adjustment for clustering. One (Larimer 2001) reported using an individual level co-variate to adjust for clustering; it is not clear how appropriate this is. The other eight cluster trials did not adjust for cluster level effects (DeJong 2006; DeJong 2009; Doumas 2008a; Doumas 2009b; Henslee 2009; McNally 2003; Michael 2006; Wilke 2014).

Publication bias

Publication bias presents a significant threat to the validity of any systematic review. Such bias appears when negative studies have a lower likelihood of being published or when outcome data from published reports are selectively neglected because of their negative outcomes. We constructed funnel plots for several outcomes when a reasonable number of trials were identified (Figure 4; Figure 5; Figure 6; Figure 7) and visually inspected the plots. In all plots, a negative SMD indicates an effect in favour of the motivational interview (MI) intervention.

Figure 4. Funnel plot of comparison: 1 Social norms (SN) vs control, outcome: 1.2 Alcohol-related problems: 4+ months.

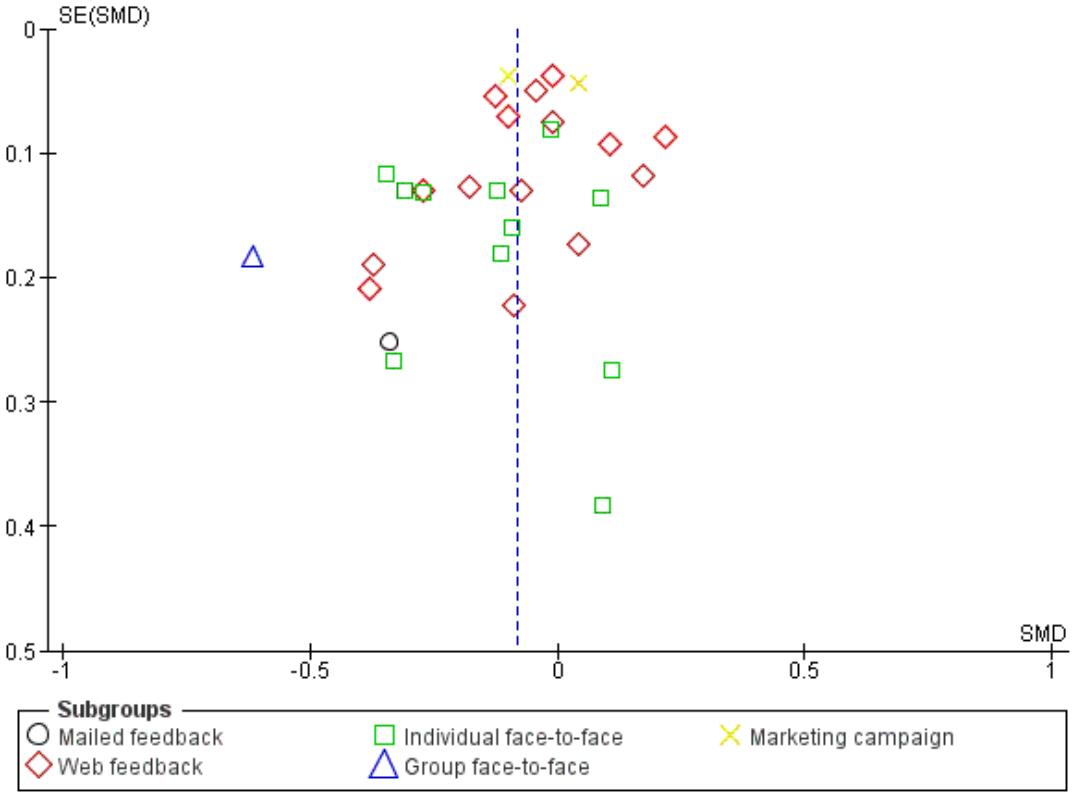


Figure 5. Funnel plot of comparison: 1 Social norms (SN) vs control, outcome: 1.4 Binge drinking: 4+ months.

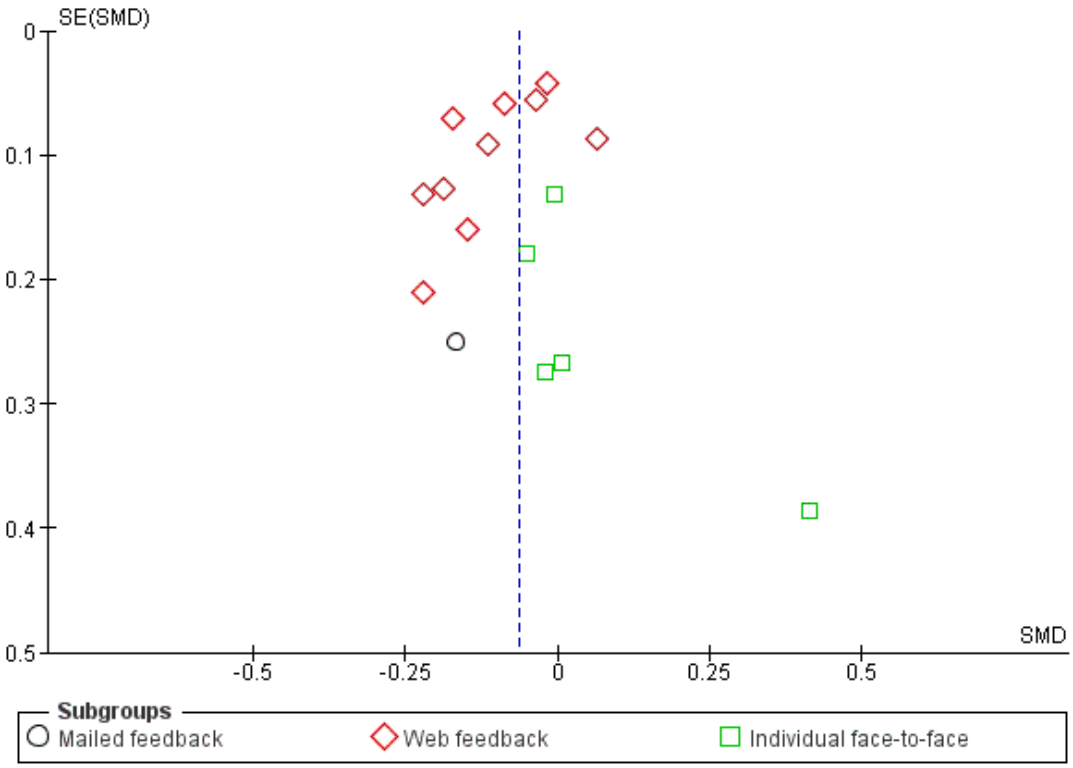


Figure 6. Funnel plot of comparison: 1 Social norms (SN) vs control, outcome: 1.6 Quantity of drinking: 4+ months.

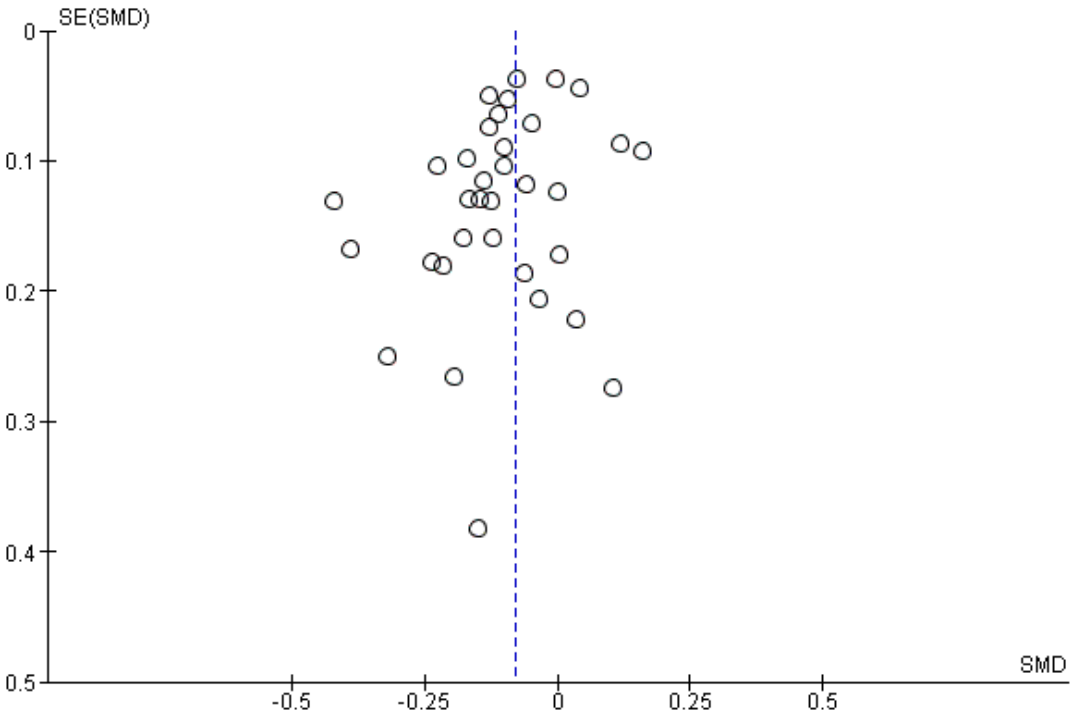
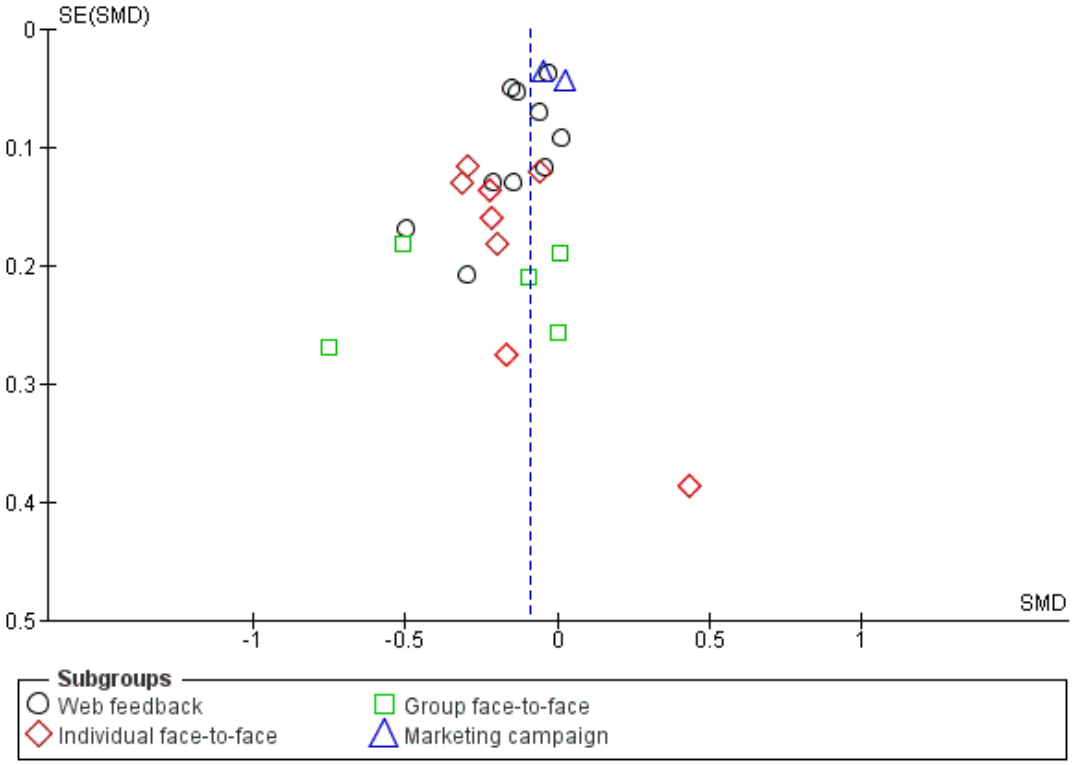


Figure 7. Funnel plot of comparison: 1 Social norms (SN) vs control, outcome: 1.8 Frequency: 4+ months.



Our interpretation is that many plots showed evidence of asymmetry. This suggests that risk of publication bias may be present in our results, but it is possible that other factors may have contributed to the asymmetry, for example, poorer study quality in smaller studies, or studies with different sizes including participants with different risk profiles.

In Figure 4, the main outliers are Eggleston 2008 and LaChance 2009. In Figure 5 and Figure 6, the main outlier is Eggleston 2008, and in Figure 7, the main outliers are Borsari 2000 and Eggleston 2008. Eggleston 2008 was a small sample study with substantially different numbers allocated to intervention and control, and with very high attrition. This suggests high risk of selection bias in this study. LaChance 2009 and Borsari 2000 also used small sample studies, but with no clear indication of poor quality or risk profiles that are distinctive from those of the other studies included in the analysis.

Effects of interventions

See: **Summary of findings for the main comparison**

Primary and secondary outcomes grouped according to delivery mode (mailed feedback, web feedback, individual face-to-face, group face-to-face, social marketing) for immediate (up to three months) and longer-term (four months or more) follow-up periods are presented below. See Summary of findings for the main comparison

Alcohol-related problems

Analysis 1.1: up to three months' follow-up

A total of 37 studies with 12,798 participants reported on alcohol-related problems and provided data from follow-up over three months. A test for subgroup differences (Chi^2 = 10.9, df = 3 (P value 0.01), I^2 = 72.5%) indicated differences according to delivery mode, so we report results separately for each mode.

- For mailed feedback, no evidence of an effect was found (SMD 0.10, 95% CI -0.02 to 0.22; participants = 1045; studies = 6; I^2 = 0%)
- For web/computer feedback, evidence of an effect was found (SMD -0.15, 95% CI -0.26 to -0.05; participants = 10,166; studies = 21; I^2 = 80%); this is equivalent to a reduction of 1.4 points in Rutgers Alcohol Problem Index (RAPI) score, assuming an SD of 9.17 (Martens 2013). As heterogeneity was very high, this pooled result should be interpreted with caution.
- For individual face-to-face feedback, no evidence of an

effect was found (SMD -0.14, 95% CI -0.27 to -0.00; participants = 1205; studies = 8; I^2 = 21%), moderate quality evidence.

- For group face-to-face feedback, no evidence suggested an effect (SMD -0.16, 95% CI -0.42 to 0.10; participants = 382; studies = 4; I^2 = 37%).

When sensitivity analysis was performed for web feedback by omitting Lovecchio 2010, the effect estimate was reduced (SMD -0.08, 95% CI -0.15 to -0.02) and the I^2 value was reduced markedly: from 80% to 32%. We performed sensitivity analysis for group face-to-face feedback by omitting McNally 2003, and the effect estimate changed only slightly (SMD -0.12, 95% CI -0.44 to 0.20; I^2 = 53%). As heterogeneity was very high, this pooled result should be interpreted with caution.

Analysis 1.2: four or more months' follow-up

A total of 30 studies with 19,227 participants reported on alcohol-related problems and provided data for follow-up at four or more months. Only one study was included for each delivery mode: mailed feedback (Collins 2002) and group face-to-face feedback (LaChance 2009), so we do not report the pooled results here. A test for subgroup differences (Chi² = 13.34, df = 4 (P value 0.01), I² = 70.0%) showed differences according to delivery mode, so we report pooled results separately for each mode when more than one study is included.

- For web/computer feedback, no evidence of an effect was found (SMD -0.04, 95% CI -0.11 to 0.02; participants = 11,767; studies = 15; I^2 = 51%). As heterogeneity was high, this pooled result should be interpreted with caution.
- For individual face-to-face feedback, evidence of an effect was noted (SMD -0.14, 95% CI -0.24 to -0.04; I^2 = 21%); this was equivalent to a reduction of 1.4 points in RAPI score, assuming an SD of 9.17 (Carey 2004).
- For social marketing campaigns, no evidence of an effect was found (SMD -0.03, 95% CI -0.17 to 0.10; participants = 4943; studies = 2; I^2 = 83%). As heterogeneity was very high, this pooled result should be interpreted with caution.

RAPI measures the frequency of occurrence of 23 problems from "None" (scored 0) to "More than 5 times" (scored 3) to give a range of scores from 0 to 69.

Binge drinking

Analysis 1.3: up to three months' follow-up

A total of 26 studies with 10,667 participants reported on binge drinking and provided data for follow-up over three months. A test for subgroup differences (Chi² = 1.72, df = 3 (P value 0.63, I^2 = 0%) showed no differences according to delivery mode, so we report the pooled result across all delivery modes. Evidence of an effect was found (SMD -0.17, 95% CI -0.24 to -0.09; I^2 = 43%); this was equivalent to a reduction of 7.4% in binge drinking in the previous month, assuming a baseline prevalence of 43.90% (Kypri 2014).

When sensitivity analysis was performed for web feedback by omitting Lovecchio 2010 and McNally 2003, the effect estimate changed only slightly (SMD -0.15, 95% CI -0.23 to -0.08; I^2 = 40%).

Analysis 1.4: four or more months' follow-up

A total of 16 studies with 11,292 participants reported on binge drinking and provided data for follow-up at four or more months. A test for subgroup differences (Chi² = 0.83, df = 2 (P value 0.66), I² = 0%) showed no differences according to delivery mode, so we report the pooled result across all delivery modes. Evidence of an effect was found (SMD -0.06, 95% CI -0.11 to -0.02; I^2 = 0%), moderate quality evidence; this was equivalent to a reduction of 2.7% in binge drinking in the previous month, assuming a baseline prevalence of 43.9% (Kypri 2014).

Quantity of drinking

Analysis 1.5: up to three months' follow-up

A total of 45 studies with 14,184 participants reported on quantity of drinking and provided data for follow-up over three months. A test for subgroup differences (Chi² = 7.4, df = 4 (P value 0.12), I² = 46%) showed no differences according to delivery mode, so we report the pooled result across all delivery modes. Evidence of an effect was found (SMD -0.14, 95% CI -0.19 to -0.09; I^2 = 36%); this was equivalent to a reduction of 1.5 points in DDQ scale score, assuming an SD of 10.77 (Martens 2013).

When sensitivity analysis was performed for web feedback by omitting Lovecchio 2010 and McNally 2003, the effect estimate did not change (SMD -0.14, 95% CI -0.19 to -0.09; I^2 = 38%).

Analysis 1.6: four or more months' follow-up

A total of 32 studies with 21,169 participants reported on quantity of drinking and provided data for follow-up at four or more months. A test for subgroup differences (Chi² = 4.88, df = 3 (P value 0.18), I² = 38.5%) showed no differences according to delivery mode, so we report the pooled result across all delivery modes. Evidence of an effect was found (SMD -0.08, 95% CI -0.12 to -0.04; I^2 = 24%) moderate quality evidence; this was equivalent to a reduction of 0.9 points in DDQ scale score, assuming an SD of 10.77 (Martens 2013).

Frequency of drinking

Analysis 1.7: up to three months' follow-up

A total of 19 studies with 7685 participants reported on frequency of drinking and provided data for follow-up over three months. A test for subgroup differences (Chi² = 21.97, df = 3, df = 3 (P value <0.0001), I² = 86.30%) showed differences according to delivery mode, so we report results separately for each mode when more than one study was included.

- For web/computer feedback, evidence of an effect was found (SMD -0.17, 95% CI -0.25 to -0.09; participants = 6385; studies = 12; I^2 = 31%) moderate quality evidence; this was equivalent to a reduction of 0.3 points in DDQ scale score, assuming an SD of 1.54 (Martens 2013).
- For individual face-to-face feedback, evidence of an effect was found (SMD -0.45, 95% CI -0.63 to -0.28; participants = 515; studies = 4; I^2 = 0%); this was equivalent to a reduction of

0.7 points in DDQ scale score, assuming an SD of 1.54 (Martens 2013).

- For group face-to-face feedback, no evidence of an effect was found (SMD -0.03, 95% CI -0.27 to 0.21; participants = 264; studies = 3; I^2 = 0%).

Analysis 1.8: four or more months' follow-up

A total of 25 studies with 16,785 participants reported on frequency of drinking and provided data for follow-up at four or more months. A test for subgroup differences (Chi^2 = 10.64, df = 3 (P value 0.01), I^2 = 71.8%) showed differences according to delivery mode, so we report pooled results separately for each mode for which more than one study was included.

- For web/computer feedback, evidence of an effect was found (SMD -0.11, 95% CI -0.17 to -0.04; participants = 9929; studies = 10; I^2 = 37%); this was equivalent to a reduction of 0.2 points in DDQ scale score, assuming an SD of 1.54 (Martens 2013).
- For individual face-to-face feedback, evidence of an effect was found (SMD -0.21, 95% CI -0.31 to -0.10; participants = 1464; studies = 8; I^2 = 0%); this was equivalent to a reduction of 0.3 points in DDQ scale score, assuming an SD of 1.54 (Martens 2013).
- For group face-to-face feedback, no evidence of an effect was found (SMD -0.26, 95% CI -0.54 to 0.02; participants = 449; studies = 5; I^2 = 55%). As heterogeneity was high, this pooled result should be interpreted with caution.
- For social marketing campaigns, no evidence of an effect was found (SMD -0.01, 95% CI -0.09 to 0.06; participants = 4943; studies = 2; I^2 = 38%) .

Peak BAC

Analysis 1.9: up to three months' follow-up

A total of 11 studies reported peak BAC with 1902 participants and provided data for follow-up over three months. A test for subgroup differences (Chi^2 = 1.07, df = 2 (P value 0.58), I^2 = 0%) showed no differences according to delivery mode, so we report the pooled result across all delivery modes. Evidence of an effect was found (SMD -0.22, 95% CI -0.33 to -0.11; I^2 = 26%); this was equivalent to a reduction of 0.024 in peak BAC, assuming an SD of 0.111 (Martens 2013).

Analysis 1.10: four or more months' follow-up

A total of 11 studies reported peak BAC with 7198 participants and provided data for follow-up at four or more months. A test for subgroup differences (Chi^2 = 2.49, df = 3 (P value 0.48), I^2 = 0%) showed no differences according to delivery mode, so we report the pooled result across all delivery modes. No clear evidence of an effect was found, so possibly only marginal (SMD -0.08, 95% CI -0.17 to 0.00; I^2 = 50%).

Typical BAC

Analysis 1.11: up to three months' follow-up

Eight studies reported typical BAC with 1336 participants and provided data for follow-up over three months. A test for subgroup differences (Chi^2 = 0.80, df = 2 (P value 0.67), I^2 = 0%) showed no differences according to delivery mode, so we report the pooled result across all delivery modes. Evidence of an effect was found (SMD -0.17, 95% CI -0.31 to -0.03; I^2 = 32%); this was equivalent to a reduction of 0.008 in typical BAC, assuming an SD of 0.046 (Schaus 2009).

Analysis 1.12: four or more months' follow-up

Four studies reported typical BAC with 490 participants and provided data for follow-up at four or more months. All four studies assessed the effects of individual face-to-face feedback. No evidence of an effect was found (SMD -0.08, 95% CI -0.26 to 0.10; I^2 = 0%).

Drinking norms

Analysis 1.13: up to three months' follow-up

A total of 14 studies with 2435 participants reported on drinking norms and provided data for follow-up over three months. A test for subgroup differences (Chi^2 = 36.44, df = 3 (P value < 0.00001), I^2 = 91.8%) indicated differences according to delivery mode, so we report results separately for each mode for which more than one study was included.

- For mailed feedback, no evidence of an effect was found (SMD -0.21, 95% CI -0.56 to 0.14; participants = 698; studies = 2; I^2 = 76%). As heterogeneity was very high, this pooled result should be interpreted with caution.
- For web/computer feedback, evidence of an effect was found (SMD -0.51, 95% CI -0.71 to -0.31; participants = 1196; studies = 8; I^2 = 61%); this was equivalent to an improvement in perceived drinking norms of 1.8 points on the drinking norms questionnaire, assuming an SD of 3.6 (DeJong 2006). As heterogeneity was high, this pooled result should be interpreted with caution.
- For group face-to-face feedback, evidence of an effect was found (SMD -0.44, 95% CI -0.84 to -0.04; participants = 297; studies = 3; I^2 = 64%); this was equivalent to an improvement in perceived drinking norms of 1.6 points on the drinking norms questionnaire, assuming an SD of 3.6 (DeJong 2006). As heterogeneity was high, this pooled result should be interpreted with caution.

Analysis 1.14: four or more months' follow-up

Nine studies with 7410 participants reported on drinking norms and provided data for follow-up over four or more months. A test for subgroup differences (Chi^2 = 47.25, df = 2 (P value < 0.00001), I^2 = 95.8%) showed differences according to delivery mode, so we report results separately for each mode for which more than one study was included.

- For web/computer feedback, evidence of an effect was found (SMD -0.34, 95% CI -0.57 to -0.11; participants = 2227; studies = 6; I^2 = 81%). As heterogeneity was very high, this pooled result should be interpreted with caution.
- For marketing campaign delivery, no evidence of an effect was found (SMD -0.06, 95% CI -0.23 to 0.11; participants = 4943; studies = 2; I^2 = 89%). As heterogeneity was very high,

this pooled result should be interpreted with caution.

DISCUSSION

Summary of main results

This systematic review assessed the effectiveness of social norms information interventions for prevention of alcohol misuse in university or college students. Seventy studies involving 44,958 participants were included.

Our primary outcome measure was alcohol misuse, measured as alcohol-related problems, binge drinking or measures of quantity or frequency of consumption. We were particularly interested in evidence for sustained effects beyond the immediate short term, so we undertook separate analyses for outcomes up to three months post-intervention and outcomes four or more months after the intervention. We undertook subgroup analysis according to mode of delivery of the intervention (mailed feedback, web/computer feedback, individual face-to-face feedback, group face-to-face feedback, campus-wide marketing campaigns) if evidence suggested that effects varied across delivery modes.

A meta-analysis of twelve studies showed a difference in favour of social norms information for alcohol-related problems at four or more months for individual face-to-face feedback (SMD -0.14, 95% CI -0.24 to -0.04). No effects on alcohol-related problems at four or more months were found for web/computer feedback or mailed feedback. In a separate meta-analysis of 16 studies, an effect in favour of social norms information was found on binge drinking (SMD -0.06, 95% CI -0.11 to -0.02). Similarly, in a meta-analysis of 32 studies, an effect in favour of social norms information was found for quantity of alcohol consumed (SMD -0.08, 95% CI -0.12 to -0.04) at four or more months. For the frequency of consumption outcome, evidence showed different effects according to mode of delivery. For web/computer feedback, a meta-analysis of 10 studies showed a difference in favour of social norms information (SMD -0.11, 95% CI -0.17 to -0.04) at four or more months; and for individual face-to-face feedback, a meta-analysis of eight studies showed a difference in favour of social norms information (SMD -0.21, 95% CI -0.31 to -0.10) at four or more months. No effects on frequency of consumption were found for group face-to-face feedback or campus-wide marketing campaigns. In a separate meta-analysis of 11 studies, no effect of social norms information was found for peak blood alcohol concentration (BAC). No effects were found for individual face-to-face feedback on typical BAC.

Our interpretation of these results is that, although we found some effects, the effect sizes were small and were unlikely to be of meaningful benefit in practice. For example, by using mean and standard deviation figures from Martens 2013 to illustrate effect size characteristics, we estimate that for alcohol-related problems at four or more months, the SMD from the meta-analysis of individual face-to-face feedback (-0.14) will result in a decrease of 1.28 points on the alcohol problems scale score (the 69-point RAPI scale was used by Martens 2013) from a score of about from 8.91 to 7.63. Similarly, for binge drinking at four or more months, the SMD from the meta-analysis (-0.07) will result in 3.1% fewer 30-day binge drinkers when the baseline prevalence is around 44% (from Kypri 2014). For quantity of alcohol consumed at four or more months, the SMD from the meta-analysis (-0.08) will result in a decrease in the number of drinks consumed each week from around 13.7 drinks/wk to 12.8 drinks/wk, on average, based on figures from Martens 2013. For frequency of consumption at four or more months (web/computer feedback), the SMD from the meta-analysis (-0.11) will result in a fall from 2.74 drinking days/wk to 2.58 drinking days/wk, based on figures from Martens 2013. And for frequency of consumption at four or more months (individual face-to-face feedback), the SMD from the meta-analysis (-0.21) will result in a fall from 2.74 drinking days/wk to 2.42 drinking days/wk, based on figures from Martens 2013.

Overall completeness and applicability of evidence

This review found a large number of studies and participants, with social norms interventions implemented using a range of delivery modes. Sufficient studies were found for web/computer feedback and individual face-to-face feedback to promote confidence in the completeness of the results. Fewer studies were found for other delivery modes, so this evidence is less complete. For example, we included only three studies that assessed the effects of social norms information marketing campaigns across campuses, and these results are equivocal: one large study from the United States (USA) found an effect, whereas another large study from the USA and a smaller study from Wales found no effects.

Most of the included studies were conducted in the USA, and the rest were completed in Australia, Brazil, New Zealand, Sweden and the United Kingdom. It is not clear whether the results of this review will be applicable in other settings in which societal norms and cultural practices for alcohol are substantially different from those seen in these countries.

This review may lack generalisability because of the nature of the samples recruited into the trials. A substantial number of studies included in this review selected participants from psychology courses or delivered interventions to high-risk students only.

Quality of the evidence

Overall, only low or moderate quality evidence was found for the effects included in our analyses. Internal validity varied markedly even though all trials were randomised. Fewer than half of the studies reported how randomisation was done, and less than a fifth

of studies reported adequate allocation concealment. Only a few studies carried out blinding; this may have led to performance or detection bias. Attrition rates were unacceptable in more than a third of studies; this may limit the power of the study to detect prespecified between-group differences or extent of applicability of study results, or both (Fewtrell 2008). Lack of adequate allocation concealment, blinding and attrition bias is associated with poor estimation of intervention effects; therefore we cannot rule out the possibility that the effects observed in this review may be exaggerated as the result of methodological limitations. To a certain extent we have considered some forms of bias in the sensitivity analysis though this should not be regarded as complete. Of particular concern in research which includes participants that are not blinded to study condition and in which outcomes are based on self-reported behaviour, is the potential for overestimation of treatment effects. In a systematic review of the effects of blinding participants in trials with self-reported outcomes, Hrobjartsson 2014 found that non-blinded participants exaggerated the effect size by an average of 0.56 of a standard deviation (though with considerable variation). It is therefore a strong plausible hypothesis that the impact of non-blinding of participants in social norms trials could fully account for any small effects found in the current review. Moreover, in a systematic review and meta-analysis of 300 randomized trials, Petrosino 2005 looked at the impact of non-independent researchers and found that in those trials where programme developers were also the researchers the mean effect size was 0.47, compared with 0.00 when the evaluation team were external and independent. Petrosino 2005 concluded that "studies in which evaluators were greatly influential in the design and implementation of treatment report consistently and substantially larger effect sizes than other types of evaluators". The Cochrane risk of bias approach does not include an assessment of this particular risk of bias, and it is not always clear from studies the extent to which programme evaluators were involved in developing and delivering the intervention. Therefore we cannot rule out the possibility that the effect sizes obtained in the current review may be inflated by a conflict-of-interest bias.

See Summary of findings for the main comparison for the quality of evidence on the main outcomes considered.

Potential biases in the review process

We found no non-English language studies for inclusion. Only studies written in English were included, making the review potentially vulnerable to English-language bias, as eligible studies may have been published in other languages. Although we searched for non-English language literature, the bibliographic databases that we searched are geared toward publications in English. We consider this to introduce low risk, as a substantial number of large trials in other languages, which we did not find in our searches, would be needed to alter the conclusions of the review.

Our arbitrary *a priori* distinction of short- and long-term as less than four or four or more months may have affected the results. As far as we know there is no empirical, theoretical or policy evidence or criteria that should be used for identifying an appropriate cut-point. However, in our experience policy makers and cost-benefit analysts are interested in longer-term rather than immediate or short-term impacts, and in our experience four months is a fairly low threshold for defining longer-term effects. Therefore we suggest that the distinction we have used in this review is policy- and practice-relevant.

In order to pool more studies in the meta-analysis we used Cohens *d* rather than Hedges *g* as our effect size measure. Hedges *g* is more robust with small samples, but its calculation would have meant several studies could not have been pooled as they did not provide results in the right format for calculating Hedges *g*. We checked the difference between estimates of Cohens *d* and Hedges *g* in those studies where we had sufficient information, and the estimates hardly differed (typically only by a third or fourth decimal place). Therefore, although this is a theoretical risk, in practice our approach will not have biased the calculated results.

Agreements and disagreements with other studies or reviews

Our findings are generally in agreement with those of narrative reviews conducted by other review authors. For example, Walters 2004 reported that feedback appears to change normative perceptions of drinking and may be more effective among students who drink for social reasons. Another review (Fager 2004) evaluated the effectiveness of interventions intended to reduce alcohol use in college students, and reported some empirical support for the use of interventions that incorporated normative feedback to reduce alcohol use and misuse. The review by Carey 2007 suggested that individual face-to-face feedback was associated with reductions in alcohol-related problems. The review by Cronce 2010 reported significant effects of personalised normative feedback interventions. Bewick 2008b found only 10 studies for inclusion in her systematic review of web-based normative feedback interventions, and concluded that more research was needed in the light of this insufficient evidence base.

However, our interpretation of the evidence is different because we conclude that effect sizes are too small to be of meaningful policy or practice benefit. This interpretation is consistent with that of another recent review that we have undertaken to examine the effectiveness of motivational interviewing, which sometimes incorporates normative feedback, for prevention of alcohol misuse in young adults (Foxcroft 2016). Moreover, we conclude that, at least for web/computer feedback and for individual face-to-face feedback, sufficient evidence is available for the findings to be robust, and we do not suggest that further trials are needed.

AUTHORS' CONCLUSIONS

Implications for practice

The main results of this review indicate that no substantive meaningful benefit is associated with social norms information interventions for alcohol misuse by university or college students. Overall, only evidence of low or moderate quality has been found for the effects examined in this review, and particular types of bias that were more common in the included studies have been associated in other reviews with over-estimation of intervention effects. Therefore, a strong plausible hypothesis is that the small effects found are in fact over-estimates due to bias. This conclusion is relevant to the range of primary and secondary alcohol outcomes examined in this review: quantity and frequency of consumption; binge drinking; alcohol-related problems; and blood alcohol concentration.

Implications for research

It is unlikely that further research on the effectiveness of social norms information will alter the substantive findings and conclusions of this review, especially in the face of widespread and pervasive alcohol availability and marketing. As small effects could potentially provide important cost benefits for prevention programmes, it may be helpful for researchers to undertake studies with sufficient statistical power to detect small effects and to undertake cost/benefit analyses. Alongside this, further research should take account of threats to validity from risk of bias, especially those biases that are likely to lead to overestimation of effects. It would also be helpful to consider the minimal clinically important difference (MCID) to aid interpretation of small effects. Such small effects may vary in size and importance between subgroups, so further research should also be powered to detect hypothesised subgroup effects. Reporting of programme content and context should be more detailed and systematic to enable comparison of these aspects across studies. Further improvements in study design, analysis and reporting, in line with accepted guidance, are required (CONSORT 2010).

This review adds to growing evidence that information-based approaches to prevention and behaviour change in the drug and alcohol field are generally found to be of no or low effectiveness (Foxcroft 2014b). However, it is plausible that as part of a broader prevention system that combines informational with developmental and environmental approaches to prevention, the whole could be greater than the sum of the parts. The study of prevention systems is a promising area for assessment of such a premise.

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* *Indicates the major publication for the study*

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Amaro 2009

Methods	Design: RCT Follow-up: 3 months and 6 months Attrition: 22% at 6 months
Participants	Age: mean = 20.4 (SD = 1.08) years, 80% in the intervention arm < 21 years and 20% > 21 years. 85% and 15%, respectively, for the control arm Sex: 71% male in the intervention arm; 76% male in the control arm Size: N = 265 mandated students Allocation: 133 intervention and 132 control Country: USA
Interventions	Intervention: University Assistance Programme (UAP) Key components: MI style interview, BASICS. Normative feedback: 2 to 3 sessions with UAP counsellor consisting of psychosocial assessment in MI style-structured to obtain info to develop brief intervention based on alcohol use and concerns presented Delivery: individual face-to-face feedback Duration: not discussed Control: services as usual (SAU); students mandated to complete a computer-based or group-based alcohol education programme
Outcomes	Weekly drinking, weekend drinking, weekday drinking, BAC, heavy episodic drinking, alcohol consequences
Funding and Declared Conflicts of Interest	Funded by NIAAA; no information about potential conflicts of interest
Notes	Results on outcome measures presented in graphical format, but not enough data for meta-analysis. Study authors have been contacted for clarification re: normative feedback and provision of results in the form of means and standard deviations

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	No information
Incomplete outcome data (attrition bias) All outcomes	High risk	High attrition at 6-month follow-up (22%)
Selective reporting (reporting bias)	Unclear risk	Not clear from paper

Amaro 2009 (*Continued*)

Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not stated

Baer 2001

Methods	Design: RCT Follow-up: 1 year, 2 years, 3 years and 4 years Attrition: 16.5%
Participants	Age: < 19 years at baseline Sex: 55% female Size: N = 348 high-risk drinkers Allocation: no information Country: USA
Interventions	Intervention: motivational interview (MI) with normative feedback Key components: motivational techniques and personalised summary feedback sheet given at the end. Normative feedback: consumption patterns, rates of drinking compared with norms for same-age peers, perceived risks and benefits of drinking, biphasic effects of alcohol, placebo and tolerance effects Delivery: feedback sheet, interview; mailed feedback Duration: no details Control: no intervention given
Outcomes	Quantity, frequency, peak drinking; daily drinking questionnaire (DDQ); Rutgers Alcohol Problem Index (RAPI); alcohol dependency scale (ADS); brief drinker profile (BDP)
Funding and Declared Conflicts of Interest	Funded by NIAAA; no information about potential conflicts of interest
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	"..were randomised..."
Allocation concealment (selection bias)	Unclear risk	Not discussed in this study
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition (16.5%)

Baer 2001 (*Continued*)

Selective reporting (reporting bias)	Low risk	All data reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the type of intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Bendtsen 2012

Methods	Design: RCT individual Follow-up: 2 months Attrition: 46%
Participants	Age: 86% aged 18 years to 25 years Sex: 54% female Size: N = 3484 Allocation: 1742 intervention and 1742 control Country: Sweden
Interventions	Intervention: an email-based internet alcohol intervention (e-SBI) that has been developed by the Lifestyle Intervention Research Group at Linköping University Key components: intervention group students received immediate feedback consisting of three statements summarising their weekly consumption, their frequency of heavy episodic drinking and their highest blood alcohol concentration during the previous three months, comparing the respondent's drinking patterns against the safe drinking limits established by the Swedish National Institute of Public Health. Immediately after this, followed comprehensive normative feedback with information describing the participant's alcohol use compared with that of Swedish university students and, if applicable, personalised advice concerning the need for reducing unhealthy levels or patterns of consumption. The student viewed the feedback on screen and could print it out. In addition the student received an email with a PDF file of the feedback Delivery: web-based Duration: no details Control: assessment only without feedback
Outcomes	AUDIT score; frequency of monthly binge drinking; weekly alcohol consumption
Funding and Declared Conflicts of Interest	Conflicts of interest: PB and MB own a company that has developed the e-SBI used in this study
Notes	
Risk of bias	

Bendtsen 2012 (*Continued*)

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-based randomisation
Allocation concealment (selection bias)	Low risk	Computer-based allocation
Incomplete outcome data (attrition bias) All outcomes	High risk	Attrition 46%
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	Low risk	All participants unaware that they were involved in a research study. Intervention delivered electronically without human involvement
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Computer-based questionnaire administration

Bewick 2008a

Methods	Design: RCT Follow-up: 12 weeks Attrition: 37%
Participants	Age: mean = 21.29 years (SD = 3.68) Sex: 69% female Size: N = 506 provided informed consent Allocation: 234 intervention and 272 control Country: UK
Interventions	Intervention: personalised normative feedback Key components: feedback on level of alcohol consumption, social norms Information and generic Information. Normative feedback: information on own consumption, associated risk, information on binge drinking behaviour, rates of drinking compared with norms for peers, negative effects reported by peers within same risk category Delivery: web-based Duration: not discussed Control: assessment only
Outcomes	CAGE; drinks per occasion; drinks in last week
Funding and Declared Conflicts of Interest	Funded by European Research Advisory Board (European Brewers). No information about potential conflicts of interest
Notes	

Bewick 2008a (*Continued*)

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	SPSS random sampling function
Allocation concealment (selection bias)	Unclear risk	Of all students answering the student experience survey, half of those who registered their interest in this study were randomly selected to be invited. Method of random selection/allocation to study unclear
Incomplete outcome data (attrition bias) All outcomes	High risk	Attrition = 37% at 12 weeks, no ITT or missing data analysis
Selective reporting (reporting bias)	Low risk	All outcomes reported on
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for the type of intervention
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Web-based administration

Bewick 2010

Methods	Design: RCT Follow-up: week 1, week 8, week 16, week 24 Attrition: 38% at week 8, 58% at week 16, 66% at week 24
Participants	Age: mean = 21.45 years (SD = 5.19), range between 18 and 67 Sex: 73% female Size: N = 1112 Allocation: 758 intervention and 354 control Country: UK
Interventions	Intervention: 'Unitcheck' Key components: feedback on level of alcohol consumption, social norms information and generic information. Normative feedback: summarised the proportion of university students who report drinking less alcohol than they consume, frequency of students within various calculated risk levels, negative effects of alcohol intake reported by students within the same risk category as the participant Delivery: web-based Duration: not discussed Control: assessment only

Bewick 2010 (*Continued*)

Outcomes	Units per week; units per occasion
Funding and Declared Conflicts of Interest	Funded by Alcohol Education and Research Council (AERC); CoI statement: "In the past, authors Bewick, Barkham, Hill, Gill, and O'May have received funding from the European Research Advisory Board. Author Bewick, as a keynote speaker, has received reimbursement of travel expenses from Anheuser-Busch. Authors Gill and O'May have previously received funding from the Portman Group"
Notes	Results for immediate and delayed feedback were combined for MA

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No information on sequence generation
Allocation concealment (selection bias)	Unclear risk	No information
Incomplete outcome data (attrition bias) All outcomes	High risk	High attrition (66%)
Selective reporting (reporting bias)	High risk	Only alcohol quantity results reported. No other outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Web-based administration

Bewick 2013

Methods	Design: RCT Follow-up: 1 week and 20 weeks Attrition: 54% and 60%
Participants	Age: mean = 20.8 years, range between 17 and 50 Sex: 70% female Size: N = 1478 Allocation: 723 intervention and 755 control Country: UK
Interventions	Intervention: 'Unitcheck' Key components: feedback on level of alcohol consumption, social norms information and generic information. Normative feedback: summarised the proportion of university

Bewick 2013 (*Continued*)

	students who report drinking less alcohol than they consume, frequency of students within various calculated risk levels, negative effects of alcohol intake reported by students within the same risk category as the participant Delivery: web-based Duration: not discussed Control: assessment only
Outcomes	7-day drinking diary; alcohol-related risky behaviour; CAGE
Funding and Declared Conflicts of Interest	Funded by European Research Advisory Board (ERAB); CoI statement: "In the past, Bewick, as keynote speaker, has received reimbursement of travel expenses from Anheuser-Busch and Noctis"
Notes	Insufficient information for inclusion of results in MA; study author contacted for additional details

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Insufficient information
Allocation concealment (selection bias)	Unclear risk	Insufficient information
Incomplete outcome data (attrition bias) All outcomes	High risk	60% loss to follow-up
Selective reporting (reporting bias)	High risk	Not all outcomes included in regression models
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Insufficient information

Borsari 2000

Methods	Design: RCT Follow-up: 6 weeks Attrition: 1%
Participants	Age: mean = 18.58 years Sex: 55% female Size: N = 60 binge drinkers Allocation: 29 intervention and 31 control

Borsari 2000 (*Continued*)

	Country: USA
Interventions	Intervention: modelled on Brief Alcohol Screening and Intervention of College Students (BASICS) Key components: MI with normative feedback, positive and negative. Normative feedback: student's alcohol use in the past month, compared with both campus and national norms, perceptions of close friends' drinking and that of the typical student, perceived norms on drinking, negative consequences of drinking. The influence of positive and negative expectancies on personal use, perceived risks and benefits of drinking, accurate information about alcohol and its effects, consequences of drinking Delivery: group face-to-face session Duration: 1 hour Control: no intervention given
Outcomes	Number of drinks, frequency of binge drinking
Funding and Declared Conflicts of Interest	No information
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	"...by flip of a coin..."
Allocation concealment (selection bias)	Unclear risk	Not discussed in this study
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition (1%)
Selective reporting (reporting bias)	Low risk	All data reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not discussed in this study

Borsari 2005

Methods	Design: RCT Follow-up: 3 months and 6 months Attrition: none
Participants	Age: mean = 19.1 years Sex: 17% female Size: N = 64 mandated students Allocation: 34 intervention and 30 control Country: USA
Interventions	Intervention: BMI Key components: personalised normative feedback (PNF), normative quantity and frequency of drinking, blood alcohol content (BAC), alcohol-related consequences and alcohol expectancies. Normative feedback: normative quantity and frequency of drinking, BAC and tolerance, alcohol-related problems, influence of setting and expectancies on drinking and alcohol expectancies Delivery: individual face-to-face BMI Duration: BMI session: 62 minutes, alcohol education (AE) session: 46 minutes Control: alcohol education session
Outcomes	AUDIT, RAPI, BAC, Alcohol and Drug Use (ADU) measure, Inventory of Drinking Situations (IDS)
Funding and Declared Conflicts of Interest	Funded by NIAAA; no information about potential conflicts of interest
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	"Coin toss..."
Allocation concealment (selection bias)	Unclear risk	Not discussed in this study
Incomplete outcome data (attrition bias) All outcomes	Low risk	No attrition
Selective reporting (reporting bias)	Low risk	All data reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not discussed

Bryant 2009

Methods	Design: RCT Follow-up: 6 weeks Attrition: 40.7% (from baseline)
Participants	Age: mean = 18.70 years Sex: 76% female Size: N = 322 Allocation: no information Country: USA
Interventions	Intervention: BASICS feedback Key components: personalised feedback Delivery: web-based (emailed) Duration: not discussed Control: generic feedback on college student alcohol use and associated consequences
Outcomes	AUDIT, RAPI, DDQ, retrospective drinking diary (RDD)
Funding and Declared Conflicts of Interest	No information
Notes	Study author contacted for details of N in each group - needed for MA

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Not stated
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	High attrition (41%)
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for this type of intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not stated

Bryant 2013

Methods	Design: RCT Follow-up: 6 weeks Attrition: 38%
Participants	Age: mean = 18.7 years Sex: 76% male Size: N = 191 Allocation: no information Country: USA
Interventions	Intervention: personalised normative feedback Key components: Feedback forms included information about estimated blood alcohol level (BAL) on typical and peak drinking occasions, self-reported negative consequences, weekly average number of standard drinks, gender-specific normative data and the amount of time and money allocated to alcohol Delivery: web-based Control: generic feedback (information only)
Outcomes	Quantity of drinking, AUDIT score, alcohol-related consequences, frequency of drinking, binge drinking, perceived norms
Funding and Declared Conflicts of Interest	No information about potential conflicts of interest or funding
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	No information
Incomplete outcome data (attrition bias) All outcomes	High risk	High attrition (38%)
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Participants and researcher/preventionist not blinded
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	No information

Butler 2009

Methods	Design: RCT Follow-up: 4 weeks Attrition: 26%
Participants	Age: intervention arm: mean = 20.60 years (SD = 1.48); control arm: mean = 20.38 years (SD = 1.49) Sex: 63% females in intervention arm, 65% females in control arm Size: N = 104 at-risk students Allocation: no information Country: USA
Interventions	Intervention: personalised feedback Key components: personalised normative feedback and alcohol information. Normative feedback: corrective feedback on normative drinking on campus, gender-specific percentile rank comparing participant's alcohol consumption vs campus norms, review of participant's binge drinking frequency and related consequences, personalised BAC curve for typical and heavy drinking occasions, review of alcohol-related reported problems and gender-specific percentile ranking related to problems, calorie consumption, expenditure. Review of harm reduction strategies and resources off and on campus Delivery: computer-based Duration: average 11.11 minutes (SD = 3.56) Control group: assessment only
Outcomes	Alcohol use days, binge drinking days per month, drinks per week, alcohol-related consequences
Funding and Declared Conflicts of Interest	No information
Notes	Randomised block design was used to separately randomly assign male and female participants. Study had two intervention arms vs control: both equally relevant for this review. Hence the control was used twice in this case-once vs face to face arm and once vs computerised arm

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	Not discussed
Incomplete outcome data (attrition bias) All outcomes	High risk	Attrition 26% at follow-up
Selective reporting (reporting bias)	Low risk	All outcomes reported on

Butler 2009 (*Continued*)

Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Carey 2006

Methods	Design: RCT Follow-up: 1 month, 6 months and 12 months Attrition: 3% at 1 month, 23% at 6 months, 13% at 12 months
Participants	Age: mean = 19.2 years Sex: 65% female Size: N = 166 in the arms included in this review Allocation: 85 intervention and 81 control Country: USA
Interventions	Intervention: BMI Key components: personalised normative feedback, effects of alcohol, alcohol-related consequences and alcohol expectancies. Normative feedback: drinking patterns, local and national gender-specific drinking norms, tolerance, typical and peak BAC, positive and negative alcohol expectancies, alcohol-related negative consequences and risk behaviour (e.g. driving); discussion of harm reduction, individual goal setting and tips for safer drinking Delivery: individual face-to-face BMI Duration: not discussed Control: no intervention given
Outcomes	Drinks per week, drinks per heaviest week, drinks per day, heavy drinking episodes, typical BAC, peak BAC, RAPI
Funding and Declared Conflicts of Interest	Funded by NIAAA; no information about potential conflicts of interest
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	"...assigned randomly within gender..."
Allocation concealment (selection bias)	Unclear risk	Not discussed in this study

Carey 2006 (*Continued*)

Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition (13% at final follow-up)
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Carey 2011

Methods	Design: RCT Follow-up: 1 month, 6 months and 12 months Attrition: 4% at 1 month, 42% at 6 months, 32% at 12 months
Participants	Age: mean = 19 years (SD = 0.71) Sex: 64% males Size: N = 338 mandated students in the arms included in this review Allocation: 164 intervention and 174 control Country: USA
Interventions	Intervention: BMI Key components: personalised feedback, alcohol-related education, discussion of harm reduction strategies. Normative feedback: personalised feedback sheet summarised, drinking patterns contrasted with gender-specific national and local norms, typical and peak BAC information, alcohol-related negative consequences and risky behaviours, personalised goal setting for risk reduction, tips for safer drinking Delivery: individual face-to-face Duration: 62 (SD = 16.58) minutes on average Control: assessment only
Outcomes	Drinks per week, drinks per heaviest week, heavy drinking frequency, typical and peak BAC, RAPI
Funding and Declared Conflicts of Interest	Funded by NIAAA. Study authors declare no CoI
Notes	Only 1-month follow-up data used in MA as control participants given alcohol intervention after 1 month

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**

Carey 2011 (*Continued*)

Random sequence generation (selection bias)	Unclear risk	Not stated
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition at 1 month (4%)
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	High risk	Assessors not blind to condition

Collins 2002

Methods	Design: RCT Follow-up: 6 weeks, 6 months Attrition: 35%
Participants	Age: mean = 18.67 years Sex: 50% male Size: N = 100 high-risk students Allocation: 49 intervention and 51 control Country: USA
Interventions	Intervention: BMI Key components: mailed motivational feedback; personalised normative feedback Delivery: mailed feedback Duration: no details Control: alcohol education leaflet mailed
Outcomes	Measures included number of drinks consumed per heaviest drinking week, frequency of heavy drinking episodes, peak blood alcohol concentration and number of alcohol-related problems, all for the last month
Funding and Declared Conflicts of Interest	Funded by NIAAA; no information about potential conflicts of interest
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**

Collins 2002 (*Continued*)

Random sequence generation (selection bias)	Unclear risk	"Participants were randomly assigned by gender..."
Allocation concealment (selection bias)	Unclear risk	Not discussed in this study
Incomplete outcome data (attrition bias) All outcomes	High risk	High attrition at 6 months (35%)
Selective reporting (reporting bias)	Low risk	All data reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not discussed in this study

Collins 2014

Methods	Design: RCT Follow-up: 1 month, 6 months and 12 months Attrition: 20% at 12 months
Participants	Age: mean = 20.8 years (SD = 1.42) Sex: 54% female Size: N = 473 previous month heavy drinkers Allocation: 242 intervention and 231 control Country: USA
Interventions	Intervention: Social Normative Feedback Key components: 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 Delivery: web feedback Duration: brief (duration not provided) Control: assessment only
Outcomes	Daily drinking questionnaire (DDQ), RAPI
Funding and Declared Conflicts of Interest	Funded by NIAAA. No CoI declaration
Notes	

Collins 2014 (*Continued*)

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Automatic randomization
Allocation concealment (selection bias)	Low risk	Automatic randomisation and allocation
Incomplete outcome data (attrition bias) All outcomes	Low risk	Attrition 20%
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Web-based survey

DeJong 2006

Methods	Design: cluster RCT by 18 matched universities Follow-up: 3 years Attrition: N/A
Participants	Age: 46.3% < 21 years Sex: 60.8% female Size: N = 18 institutions and 2921 participants at baseline survey Allocation: 9 (1515) intervention and 9 (1406) control Country: USA
Interventions	Intervention: social marketing campaign Key components: core messages posted based on two questionnaires; example: "67% of XYZ University students have 4 or fewer drinks when they party" Normative feedback: core message reported a normative behaviour for all students and corrected an identified misperception. Core message based on two student survey questions: "What is the number of drinks you consume in a week?" and "When you party, how many drinks do you usually have?" Example: "67% of XYZ University students have 4 or fewer drinks when they party" Delivery: core messages posted on university campus Duration: 3-year campaign Control: no intervention given
Outcomes	30-day frequency, drinks per week, drinks when partying, recent maximum consumption, alcohol-related consequences

DeJong 2006 (*Continued*)

Funding and Declared Conflicts of Interest	Funded by NIAAA; no information about potential conflicts of interest	
Notes	No adjustment for clustering effects	
Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	Not discussed in this study
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Sample surveys undertaken at each time point; no follow-up of individuals
Selective reporting (reporting bias)	Low risk	All data reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for the intervention.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

DeJong 2009

Methods	Design: cluster RCT by 14 matched universities Follow-up: 3 years Attrition: N/A
Participants	Age: 88.5% < 24 years Sex: 55% female Size: N = 14 institutions and 2236 completed survey responses at baseline Allocation: 7 (1117) intervention and 7 (1119) control Country: USA
Interventions	Intervention: social norms marketing campaign Key components: core messages posted on universities based on one of two questionnaires. Example: "67% of XYZ University students have 4 or fewer drinks when they party". Normative feedback: core message reported a normative behaviour for all students and corrected an identified misperception. Core message based on two student survey questions: "What is the number of drinks you consume in a week?" and "When you party, how many drinks do you usually have?" Example: "67% of XYZ University students have 4 or fewer drinks when they party" Delivery: core messages posted on university campus Duration: 3-year campaign

DeJong 2009 (*Continued*)

	Control: no intervention given
Outcomes	30-day frequency, drinks per week, drinks when partying, recent maximum consumption, BAC, alcohol-related consequences
Funding and Declared Conflicts of Interest	Funded by NIAAA and US Department of Education; no information about potential conflicts of interest
Notes	No adjustment for clustering effects

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	Not discussed in this study
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Sample surveys undertaken at each time point; no follow-up of individuals
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Doumas 2008a

Methods	Design: cluster RCT Follow-up: 6 weeks and 3 months Attrition: 44% at 3 months
Participants	Age: 18 years to 20 years, mean = 18.10 (SD = 0.61) Sex: 58% male Size: N = 3 classes and 52 students Allocation: 2 (28) intervention and 1 (24) control Country: USA
Interventions	Intervention: personalised normative feedback Key components: personalised feedback, normative data regarding drinking and related risks. Normative feedback: personalised graphical feedback on individual drinking levels in relation to national peer norms (pie chart), summary of alcohol consumption in past

Doumas 2008a (*Continued*)

	year, approximate financial cost, calories associated with drinking, how quickly the body processes alcohol, associated risk status for negative consequences and risk status for problematic drinking based on (AUDIT) score Delivery: web-based Duration: 15 minutes Control: web-based alcohol education
Outcomes	Drinking quantity and peak consumption (DDQ), frequency of drinking to intoxication
Funding and Declared Conflicts of Interest	No information
Notes	No adjustment for clustering effects

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	Not discussed
Incomplete outcome data (attrition bias) All outcomes	High risk	Attrition = 44% at 3 months
Selective reporting (reporting bias)	Low risk	All outcomes reported on
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for this intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Doumas 2009a

Methods	Design: RCT Follow-up: 1 month Attrition: 11.8%
Participants	Age: 18 years to 24 years, mean = 19.24 (SD = 1.33) Sex: 72.4% male Size: N = 76 mandated students Allocation: 46 intervention and 31 control (as reported, although N = 77) Country: USA

Doumas 2009a (*Continued*)

Interventions	Intervention: personalised normative feedback Key components: personalised normative feedback and normative data. Normative feedback: personalised and normative graphical feedback on level of drinking relative to US peers norms Delivery: web-based Duration: 15 minutes Control: web-based alcohol education
Outcomes	Drinking quantity and peak consumption (DDQ), frequency of drinking to intoxication, RAPI, AUDIT
Funding and Declared Conflicts of Interest	No information
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Computer-generated random numbers table
Allocation concealment (selection bias)	Unclear risk	No information
Incomplete outcome data (attrition bias) All outcomes	Low risk	Attrition = 11.8%
Selective reporting (reporting bias)	Low risk	All outcomes reported on
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Doumas 2009b

Methods	Design: cluster RCT Follow-up: 3 months Attrition: 38%
Participants	Age: 18 years to 54 years, mean = 21.99 (SD = 7.69) Sex: 59% male Size: N = 6 classes and 70 students Allocation: 3 (28) intervention and 3 (42) control Country: USA

Doumas 2009b (*Continued*)

Interventions	Intervention: Electronic-Check Up To Go (e-CHUG) Key components: personalised normative feedback. Normative feedback: personalised feedback regarding drinking and its associated risks, normative data for the university population Delivery: web-based Duration: 15 minutes Control: assessment only
Outcomes	Drinking quantity and peak consumption (DDQ), frequency of drinking to intoxication, RAPI, AUDIT
Funding and Declared Conflicts of Interest	No information
Notes	No adjustment for clustering effects

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	Not discussed
Incomplete outcome data (attrition bias) All outcomes	High risk	Attrition = 38% from randomisation, 35% from baseline
Selective reporting (reporting bias)	Low risk	All outcomes reported on
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for this intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Eggleston 2008

Methods	Design: RCT Follow-up: 6 months Attrition: 87.29% from randomisation, 66.95% from baseline
Participants	Age: mean = 19.0 years (SD = 1.7) Sex: 58% female Size: N = 115 heavier drinkers Allocation: 76 intervention and 39 control Country: USA

Eggleston 2008 (*Continued*)

Interventions	Intervention: normative feedback alone. Key components: BASICS; personalised feedback, normative information. Normative feedback: individuals' personalised feedback with information on normative perceptions and their influence Delivery: individual face-to-face Duration: not discussed for intervention arms, control arms one to two hours Control: assessment only
Outcomes	Drinks per day in average week, AUDIT, RAPI
Funding and Declared Conflicts of Interest	Funded by Ohio State University Wellness Award; no information about potential CoI
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	Not discussed
Incomplete outcome data (attrition bias) All outcomes	High risk	Attrition = 87% at follow-up
Selective reporting (reporting bias)	High risk	Not all prespecified outcomes reported on
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants or personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Ekman 2011

Methods	Design: RCT Follow-up: 3 months and 6 months Attrition: intervention: 3 months = 62%, 6 months = 76%; control: 3 months = 65%, 6 months = 76%
Participants	Age: 18 years to 25 years, 13 participants over 26 years of age Sex: intervention group: 46% male; control group: 37% male Size: N = 295 risky drinkers Allocation: 150 intervention and 145 control Country: Sweden

Ekman 2011 (*Continued*)

Interventions	Intervention: E-Screening and Brief Intervention Key components: statements summarising weekly consumption, frequency of heavy episodic drinking and highest BAC in past three months, compared with Swedish safe drinking limits, and normative feedback along with advice on reducing unhealthy levels. Normative feedback: comprehensive feedback on individual alcohol used compared with peers at the university Delivery: web-based Duration: not discussed Control: very brief summary only feedback
Outcomes	Weekly consumption, heavy episodic drinking, peak BAC, risky drinker status
Funding and Declared Conflicts of Interest	No funding; one study author declared, "Partner of a company that develops similar applications as the one used in this study"
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	"Computerized assignment to groups"
Allocation concealment (selection bias)	Unclear risk	Not reported
Incomplete outcome data (attrition bias) All outcomes	High risk	High attrition (76%)
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of personnel not possible for this intervention
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Web-based remote administration

Geisner 2007

Methods	Design: RCT Follow-up: 1 month Attrition: 5%
Participants	Age: 19.28 years (SD = 1.97) Sex: 70% female Size: N = 177 students with increased depression scores

Geisner 2007 (*Continued*)

	Allocation: 89 intervention and 88 control Country: USA
Interventions	Intervention: personalised alcohol feedback Key components: the student's drinking percentile was calculated on the basis of comparison of the student's reported drinks per week to drinking rates from a survey of approximately 6000 students. Normative feedback: information about the role of alcohol in the cause and/or maintenance of depression was first presented, followed by the student's drinking rates and experienced alcohol-related problems or consequences, including how these rates compared with other college students on campus. Perceptions of the normative drinking rates on campus were juxtaposed with actual drinking rates on campus. Finally, a general list of moderation tips was provided (e.g. spacing drinks, limit setting). Personalised feedback about depression symptoms and a depression tips brochure were also provided Delivery: mailed feedback Duration: N/A Control group: students received thank you letter and a list of community resources
Outcomes	Perceived norms (Drinking Norms Rating Form; DNRF), DDQ, RAPI
Funding and Declared Conflicts of Interest	Funded by NIAAA and the Stanley Foundation. No information about potential CoI
Notes	Intervention delivered as an adjunct to a brief treatment for college students with depression symptoms

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	"Determined by a computerized random number generator"
Allocation concealment (selection bias)	Unclear risk	Not reported
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition (5%)
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Henslee 2009

Methods	Design: cluster RCT Follow-up: 5 weeks Attrition: 52.3%
Participants	Age: mean = 18.11 years (SD = 0.40) Sex: 36.6% males Size: N = 14 classes and 216 students Allocation: no information Country: USA
Interventions	Intervention: personalised feedback lecture Key components: information on estimated BAC on typical and peak drinking occasions, self-reported negative consequences, weekly average number of standard drinks, amount of time and money allocated to alcohol. Strategies to reduce risky drinking behaviours. Normative feedback: personalised feedback about participant's alcohol use based on baseline, gender-specific normative data Delivery: group face-to-face Duration: 50 minutes (standard lecture duration) Control: alcohol information only
Outcomes	Binge drinking, AUDIT, RAPI
Funding and Declared Conflicts of Interest	No information
Notes	Significant differences between students who completed and those who did not complete follow-up assessments. No adjustment for clustering effects

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	Not discussed
Incomplete outcome data (attrition bias) All outcomes	High risk	Attrition = 52.3% at follow-up
Selective reporting (reporting bias)	Low risk	All outcomes reported on
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Juárez 2006

Methods	Design: RCT Follow-up: 2 months Attrition: 27%
Participants	Age: 19.43 years Sex: 52.5% female Size: N = 56* high-risk students in the trial arms included in this review Allocation: no information Country: USA
Interventions	I. Mailed feedback control Intervention: modelled on Check-Up to GO (CHUG) Key components: personalised individual normative mailed feedback. Normative feedback: alcohol-related consequences, level of risk for alcohol problems, reasons for drinking, peak BAC, dependence symptoms and perceived and actual prevalence of (gender-specific) college drinking norms Delivery: mailed feedback Duration: N/A Control group: no intervention given II. Individual face-to-face feedback and MI or MI only Intervention: modelled on MET-MATCH Key components: personalised individual normative face-to face feedback. Normative feedback: alcohol-related consequences, level of risk for alcohol problems, reasons for drinking, peak BAC, dependence symptoms and perceived and actual prevalence of (gender-specific) college drinking norms Delivery: individual face-to-face Duration: from 30 minutes to 80 minutes Control: MI only
Outcomes	Drinks per day, peak BAC, alcohol-related problems
Funding and Declared Conflicts of Interest	Funded by NIAAA; no information about potential CoI
Notes	*Estimated from analysed sample and attrition rate

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Incomplete outcome data (attrition bias) All outcomes	High risk	
Selective reporting (reporting bias)	Low risk	
Blinding of participants and personnel (performance bias) All outcomes	High risk	

Kypri 2004

Methods	Design: RCT Follow-up: 6 weeks, 6 months Attrition: < 10%
Participants	Age: mean = 20.15 years Sex: not given Size: N = 104 hazardous/harmful drinkers Allocation: 51 intervention and 53 control Country: New Zealand
Interventions	Intervention: brief interventions Key components: computerised assessment, feedback and advice. Normative feedback: summary of recent consumption, risk status, comparison of consumption with recommended upper limits, peak BAC, comparison of consumption with national and university norms and correction of norm misperception Delivery: web feedback Duration: no details Control: alcohol advice leaflet given
Outcomes	Drinking frequency, typical occasion quantity, total volume, heavy episode frequency, alcohol problems scale (APS), academic role expectations and alcohol scale (AREAS)
Funding and Declared Conflicts of Interest	Funded by the Alcohol Advisory Council of New Zealand and the Health Research Council of New Zealand; no information on potential CoI
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	"Randomization was effected by computer in blocks of 10"
Allocation concealment (selection bias)	Low risk	"Assigned randomly by computer"
Incomplete outcome data (attrition bias) All outcomes	Low risk	Attrition low (< 10%)
Selective reporting (reporting bias)	Low risk	All data reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Participants not blind to intervention. Personnel blind to intervention group
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Blinding of outcome assessor not specified

Kypri 2005

Methods	Design: RCT Follow-up: 6 weeks Attrition: 14%
Participants	Age: 17 to 24 years Sex: 49% female Size: N = 146 hazardous/harmful drinkers in the trial arms included in this review Allocation: 72 intervention and 74 control Country: New Zealand
Interventions	Intervention: brief interventions Key components: computerised assessment, feedback and advice. Normative feedback: health authority recommendations, social norms and self-comparison with percentage of same age and gender adhering to these recommendations Delivery: web feedback Duration: no details Control: no intervention given
Outcomes	4-week report of maximum number of drinks consumed in a single episode and the episode's duration, peak BAC and binge-drinker status
Funding and Declared Conflicts of Interest	Funded by the National Heart Foundation of New Zealand; no information about potential CoI
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	"Computerized random number generator. .."
Allocation concealment (selection bias)	Low risk	"Assigned randomly by computer"
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition at 6 weeks (14%)
Selective reporting (reporting bias)	Low risk	All data reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Participants not blind to intervention. Personnel blind to intervention group
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Assessors blinded to intervention group

Kypri 2008

Methods	Design: RCT Follow-up: 6 months and 12 months Attrition: 16.1%
Participants	Age: 20.1 Sex: 74.3% female, 51.98% Size: N = 284 hazardous/harmful drinkers in the trial arms included in this review Allocation: 138 intervention and 146 control Country: New Zealand
Interventions	Intervention: brief interventions Key components: computerised assessment, personalised feedback. Normative feedback: summary of recent consumption, risk status, comparison of consumption with recommended upper limits, peak BAC, comparison of consumption with national and university norms and correction of norm misperception Delivery: web feedback Duration:10 minutes to 15 minutes of intervention Control: alcohol education leaflet given
Outcomes	(1) Frequency of drinking (number of drinking days in the preceding two weeks); (2) typical occasion quantity (standard drinks [10 g of alcohol] consumed per typical drinking occasion in the preceding four weeks); (3) total volume (standard drinks consumed in the preceding two weeks); (4) frequency of very heavy episodes (number of occasions in the preceding two weeks on which a threshold of 80 grams of alcohol for women or 120 grams of alcohol for men was breached); (5) personal, social, sexual and legal consequences of episodic heavy drinking (items endorsed on the Alcohol Problems Scale [score range, 0 to 14]); (6) consequences related to academic performance (score on the Academic Role Expectations and Alcohol Scale [score range, 0 to 35]); and (7) the AUDIT score at 12 months
Funding and Declared Conflicts of Interest	Funded by the Alcohol Advisory Council of New Zealand and the Health Research Council of New Zealand; study authors declare no conflicts
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	"Assigned randomly by computer"
Allocation concealment (selection bias)	Low risk	"Assigned randomly by computer"
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition (16%) at 12 months
Selective reporting (reporting bias)	Low risk	All data reported

Kypri 2008 (*Continued*)

Blinding of participants and personnel (performance bias) All outcomes	High risk	Participants not blind to intervention. Personnel blind to intervention group
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Outcome assessors blind to intervention group

Kypri 2009

Methods	Design: RCT Follow-up: 1 month and 6 months Attrition: intervention: 23% at 1 month, 35% at 6 months; control: 20% at 1 month, 35% at 6 months
Participants	Age: 17 to 24 years, mean = 19.7 (SD = 1.8) Sex: 45.1% women in intervention arm, 45.5% in control arm Size: N = 2435 at baseline and N = 1578 at 6-month follow-up (hazardous or harmful drinkers) Allocation: 1251 intervention and 1184 control Country: Australia
Interventions	Intervention: motivational assessment and personalised feedback Key components: reflection on AUDIT score, alcohol eduction, information on related risks and personalised feedback. Normative feedback: bar graphs comparing episodic and weekly consumption with that of other students of the same age and sex Delivery: web-based Duration: not discussed Control: assessment/screening only
Outcomes	Primary outcomes: frequency of drinking, number of standard drinks per typical occasion and average weekly volume. Secondary outcomes: APS score, AREAS score, prevalence of binge drinking and prevalence of heavy drinking
Funding and Declared Conflicts of Interest	Funded by Western Australian Health Promotion Foundation (Healthway); study authors declare no conflicts
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Randomly assigned by web server software
Allocation concealment (selection bias)	Low risk	Randomly assigned by web server software

Kypri 2009 (*Continued*)

Incomplete outcome data (attrition bias) All outcomes	High risk	Attrition rates 35% at 6 months
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Participants not blind to intervention. Personnel blind to intervention group
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Outcome assessors blind to intervention group

Kypri 2013

Methods	Design: RCT Follow-up: 5 months Attrition: intervention: 22%; control: 20%
Participants	Age: 17 years to 24 years old Sex: 65% female Size: N = 1789 Allocation: 850 control and 939 intervention Country: New Zealand, Maori students
Interventions	Intervention: personalised feedback Key components: reflection on AUDIT score, alcohol eduction, information on related risks and personalised feedback. Intervention group received personalised feedback consisting of AUDIT and LDQ scores with explanation of associated health risk and information about how to reduce that risk; an estimated BAC for the heaviest episode in the previous four weeks, with information on behavioural and physiological sequelae of various BACs, and the risk of having a single vehicle traffic crash; estimates of monthly expenditure. Further web pages were presented as options, offering facts about alcohol, tips for reducing the risk of harm and details of where medical help and counselling could be found. Normative feedback: bar graphs comparing episodic and weekly consumption with those of other students of the same age and sex Delivery: web-based Duration: not discussed Control: assessment/screening only
Outcomes	Frequency of drinking, typical occasion quantity, volume consumed, consequences related to academic expectations, exceeded guidelines for binge drinking, exceeded guidelines for heavy drinking
Funding and Declared Conflicts of Interest	Research was funded by the Alcohol Advisory Council (now the Health Promotion Agency), a statutory body of the New Zealand Government. Study authors declare no conflicts of interest

Kypri 2013 (*Continued*)

Notes		
Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Respondents who scored ≥ 4 were randomly assigned by the web server to the control group (screening only) or the intervention group
Allocation concealment (selection bias)	Low risk	Randomisation and all other study procedures were fully automated and could not be subverted
Incomplete outcome data (attrition bias) All outcomes	High risk	Overall attrition rate at 5 months: 21%
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for this intervention
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Computer-based questionnaire

Kypri 2014

Methods	Design: RCT Follow-up: 5 months Attrition: intervention: 16%; control: 17%
Participants	Age: 17 years to 24 years old Sex: 57.4% female Size: N = 2850 Allocation: 1437 intervention and 1413 control Country: New Zealand
Interventions	Intervention: personalised feedback Key components: reflection on AUDIT score, alcohol education, information on related risks and personalised feedback. Intervention group received personalised feedback consisting of AUDIT and LDQ scores with explanation of associated health risks and information on how to reduce that risk; estimated BAC for the heaviest episode in the previous four weeks, with information on behavioural and physiological sequelae of various BACs, and risk of having a single vehicle traffic crash; estimates of monthly expenditure. Further web pages were presented as options, offering facts about alcohol, tips

	for reducing the risk of harm and details on where medical help and counselling could be found. Normative feedback: bar graphs comparing episodic and weekly consumption with those of other students of the same age and sex Delivery: web-based Duration: not discussed Control: assessment/screening only
Outcomes	Frequency of drinking, typical occasion quantity, volume consumed, consequences related to academic expectations, exceeded guidelines for binge drinking, exceeded guidelines for heavy drinking
Funding and Declared Conflicts of Interest	Research was funded by the Alcohol Advisory Council (now the Health Promotion Agency), a statutory body of the New Zealand Government. Study authors declare no conflicts of interest
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Respondents who scored ≥ 4 were randomly assigned by the web server to the control group (screening only) or the intervention group
Allocation concealment (selection bias)	Low risk	Randomisation and all other study procedures were fully automated and could not be subverted
Incomplete outcome data (attrition bias) All outcomes	Low risk	Attrition rates at 5 months: 17%
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for this intervention
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Computer-based questionnaire

LaBrie 2013

Methods	Design: individual and RCT Follow-up: 1 month, 3 months and 6 months Attrition: 1 month: 10.3%; 3 months: 16%; 6 months: 14.5%
Participants	Age: 18 years to 24 years of age Sex: 56.7% female Size: N = 2831 Allocation: 168 control and 1663 intervention Country: USA
Interventions	Intervention: personalised feedback Key components: 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 (1) one's own drinking behaviour, (2) their reported perceptions of the reference group's drinking behaviour on their respective campus, at the level of specificity defined by the assigned intervention condition and (3) 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 their percentile ranks and compared 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") Delivery: web-based Duration: not discussed Control: assessment only Means of delivery: web
Outcomes	Alcohol consumption (DDQ); descriptive norms; alcohol-related negative consequences
Funding and Declared Conflicts of Interest	No conflicts of interest. Data collection and manuscript preparation supported by National Institute on Alcohol Abuse and Alcoholism Grant R01AA012547-06A2
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Web-based algorithm
Allocation concealment (selection bias)	Unclear risk	No information
Incomplete outcome data (attrition bias) All outcomes	Low risk	14.5% at 6-month follow-up
Selective reporting (reporting bias)	Low risk	All outcomes reported

LaBrie 2013 (*Continued*)

Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for this intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	No information

LaChance 2009

Methods	Design: cluster RCT (each cluster with 4 to 10 participants) Follow-up: immediate post-test, 3 months and 6 months Attrition: 20% attrition at 3-month follow-up, 24% attrition at 6 months (from baseline)
Participants	Age: mean = 18.6 years Sex: 63% male Size: N = 18 groups with 126 mandated participants Allocation: 10 (68) intervention and 8 (58) control Country: USA
Interventions	Intervention: Group Motivational Enhancement Therapy session (GMET) Key components: during the feedback component of the GMET, students were provided personalised feedback handouts including their own self-reported drinking patterns. Normative feedback: During feedback, students were provided personalised feedback handouts including their own self-reported drinking patterns, quantity/frequency rates, BAC levels and other drug use, compared with national averages Quantity-frequency rates, BAC levels and other drug use compared with national averages Delivery: group face-to-face Duration: 1 to 2 3-hour sessions Control: Alcohol Information Group
Outcomes	Average drinks per drinking day, AUDIT, RAPI
Funding and Declared Conflicts of Interest	Funded by NIH; no information about potential CoI
Notes	The third arm in this study was not considered for the purpose of this review. Only the GMET (intervention) and AI groups were considered, with AI most similar to control arms from other included studies 'Unit of analysis' issues due to CRCT accounted for via multi-level analysis

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Randomisation by the roll of a dice occurred after groups were scheduled, 24 hours before the

LaChance 2009 (*Continued*)

		group
Allocation concealment (selection bias)	Unclear risk	Not discussed
Incomplete outcome data (attrition bias) All outcomes	High risk	Attrition = 20% at 3 months, 24% at 6 months of follow-up
Selective reporting (reporting bias)	Unclear risk	Nearly all outcomes were reported on (results for 1 measure of quantity were not provided in the publication)
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Larimer 2001

Methods	Design: cluster RCT of 12 fraternities Follow-up: 12 months Attrition: 25%
Participants	Age: 18.8 Sex: 59% female Size: N = 12 fraternities and 159 students Allocation: 6 (77) intervention and 6 (82) control Country: USA
Interventions	Intervention: BASICS and MI Key components: baseline assessment followed by individual feedback session Delivery: face-to-face Duration: 1 hour Primary staff: undergraduate staff or a clinical psychologist (undergraduate, master's level) Control group: 1 hour didactic presentation
Outcomes	Quantity, frequency, peak and typical BAC, RAPI, ADS
Funding and Declared Conflicts of Interest	Funded by NIAAA; no information about potential CoI
Notes	Controlled for cluster effects by co-variate adjustment; unclear how appropriate this is

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**

Larimer 2001 (*Continued*)

Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	No information
Incomplete outcome data (attrition bias) All outcomes	High risk	High attrition (25%)
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Lau-Barraco 2008

Methods	Design: RCT Follow-up: 1 month Attrition: 40.7%	
Participants	Age: mean = 19.88 years (SD = 2.08) Sex: 56.68% female Size: N = 239 moderate to heavy drinkers Allocation: no information Country: USA	
Interventions	Intervention: alcohol 101 Key components: normative feedback: to educate students about the effects of alcohol misused and what constitutes "normal" drinking among their peers Delivery: group computer-based (CD) Duration: 90 minutes to 120 minutes Control group: assessment only	
Outcomes	Drinks per week, heavy episodic drinking	
Funding and Declared Conflicts of Interest	Funded by NIAAA	
Notes		
Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**

Lau-Barraco 2008 (*Continued*)

Random sequence generation (selection bias)	Unclear risk	Randomised using an expected 2:1:1 assignment ratio, but no information about sequence generation method
Allocation concealment (selection bias)	Unclear risk	Not discussed
Incomplete outcome data (attrition bias) All outcomes	High risk	Attrition = 40.7% at follow-up
Selective reporting (reporting bias)	Low risk	All outcomes were reported on
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Lewis 2007a

Methods	Design: RCT Follow-up: 3 months and 5 months Attrition: 3 months: 6.1%; 5 months: 11%
Participants	Age: mean = 18.53 years Sex: 52.24% female Size: N = 185 high-risk students Allocation: no information Country: USA
Interventions	Intervention: social norm intervention Key components: web-based survey in a controlled laboratory setting, personalised feedback, norms for typical student drinking behaviour. Normative feedback: personal drinking, perceptions of typical student drinking and actual typical student drinking. Percentile ranking comparing drinking with that of other students Delivery: computer-delivered brief PNF Duration: 1 hour Control: no intervention given
Outcomes	Drinks per week and drinking frequency (DDQ), alcohol consumption inventory (ACI) , quantity-frequency scale (QFS), drinking norms rating form (DNRF)
Funding and Declared Conflicts of Interest	No information
Notes	
Risk of bias	

Lewis 2007a (*Continued*)

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Not discussed in this study
Allocation concealment (selection bias)	Unclear risk	Not discussed in this study
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition at 5 months (11%)
Selective reporting (reporting bias)	Low risk	All data reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Blinding of outcome assessor not specified

Lewis 2007b

Methods	Design: RCT Follow-up: 3 months and 12 months Attrition: 15%
Participants	Age: mean = 18.53 years Sex: 53.8% female Size: N = 316 high-risk students Allocation: no information Country: USA
Interventions	Intervention: PNF Key components: normative feedback: personal drinking behaviour, personal perceptions of typical student drinking behaviour, information regarding actual norms for typical student drinking behaviour and their rank in comparison with other students Delivery: computer-based Duration: no information Control: no intervention given
Outcomes	Drinks per week and drinking frequency (DDQ), drinking norms rating form (DNRF)
Funding and Declared Conflicts of Interest	Funded by NIAAA; no information about potential CoI
Notes	
Risk of bias	

Lewis 2007b (*Continued*)

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	No information
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition at 5 months (15%)
Selective reporting (reporting bias)	Low risk	All data reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Blinding of outcome assessor not specified

Lewis 2008

Methods	Design: RCT Follow-up: 1 week after 21st birthday Attrition: intervention: 79.1%; control: 76.3%
Participants	Age: 20 years to 21 years Sex: 35.3% male Size: N = 281 Allocation: no information Country: USA
Interventions	Intervention: 21st birthday-specific PNF card Key components: personalised normative feedback: feedback in the form of questions and answers that corrected students' misperceptions by providing actual normative data Delivery: mailed Duration: not discussed Control: no intervention given
Outcomes	Hours spent drinking during 21st birthday celebrations, BAC, RAPI
Funding and Declared Conflicts of Interest	Funded by NIAAA; no information about potential CoI
Notes	"Because baseline drinking was not assessed, it is unknown whether the two groups differed in terms of typical drinking behaviour"
Risk of bias	

Lewis 2008 (*Continued*)

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	Not discussed
Incomplete outcome data (attrition bias) All outcomes	High risk	High attrition (79%)
Selective reporting (reporting bias)	Low risk	All outcomes reported on
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Lewis 2014

Methods	Design: RCT Follow-up: 3 months and 6 months Attrition: 10% at 3 months, 14.7% at 6 months
Participants	Age: 18 to 25 years, mean = 19.90 Sex: 57.6% female Size: N = 240 in trial arms included in this review Allocation: intervention 119 and control 121 Country: USA
Interventions	Intervention: PNF Key components: personalised normative feedback: feedback provided a percentile rank for comparison between participants' reported drinking and that of their same-sex peers Delivery: web-based Duration: not discussed Control: assessment only
Outcomes	Drinks per week; drinks per occasion; drinking frequency; alcohol-related negative consequences; perceived drinks per week; perceived drinks per occasion; perceived drinking frequency
Funding and Declared Conflicts of Interest	Funding and declared conflicts of interest not stated
Notes	
Risk of bias	

Lewis 2014 (*Continued*)

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"Random assignment was administered automatically using a computer algorithm and occurred in blocks of four to keep cell sizes equal"
Allocation concealment (selection bias)	Low risk	Web-based
Incomplete outcome data (attrition bias) All outcomes	Low risk	Attrition 14.7%
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not stated

Lovecchio 2010

Methods	Design: RCT Follow-up: 1 month Attrition: intervention: 8.51%; control: 32.1%
Participants	Age: 83.6% were aged 18 years Sex: 54.3% female. Size: N = 1620 (1458 completed baseline) Allocation: 810 intervention and 810 control Country: USA
Interventions	Intervention: AlcoholEdu (2007 version) Key components: 2007 AlcoholEdu course. Normative feedback: baseline survey of attitudes, behaviour and consequences; four content chapters, with customised pathways based on gender and reported drinking patterns; a course evaluation; a post-intervention knowledge test; and a post-intervention survey, similar to the baseline survey, which was completed four to six weeks after the course. Areas of focus include factors that cause blood alcohol concentration (BAC) to rise rapidly and associated consequences, benefits of abstaining from or reducing drinking, influences and correct norms information, legal information and strategies to reduce drinking Delivery: web-based Duration: not discussed Control: assessment only

Lovecchio 2010 (*Continued*)

Outcomes	Typical average number of drinks per occasion, total number of drinks in past two weeks, heavy episodic drinking in past two weeks	
Funding and Declared Conflicts of Interest	No information	
Notes		

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	Not discussed
Incomplete outcome data (attrition bias) All outcomes	High risk	Attrition = 8.51% in intervention arm, 32. 1% in control arm
Selective reporting (reporting bias)	Low risk	All outcomes were reported on
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Marlatt 1998

Methods	Design: RCT Follow-up: 1 year and 2 years Attrition: 14%
Participants	Age: not given Sex: 54% female Size: N = 348 high-risk students Allocation: no information Country: USA
Interventions	Intervention: MI Key components: motivational techniques and personalised summary feedback sheet given at the end. Normative feedback: individualised feedback about drinking patterns, risks and beliefs about alcohol effects. Students' self-reported drinking rates were compared with college averages, and perceived risks for current and future problems were identified. Beliefs about alcohol effects on social behaviour were discussed Delivery: feedback sheet, interview

Marlatt 1998 (*Continued*)

	Duration: no details Control: no intervention given
Outcomes	Typical drinking quantity, frequency and single greatest amount of alcohol consumption (peak consumption) over the past month, DDQ, RAPI, ADS
Funding and Declared Conflicts of Interest	Funded by NIAAA; no information about potential CoI
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	"Computer generated...."
Allocation concealment (selection bias)	Unclear risk	Not discussed in this study
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition (14%)
Selective reporting (reporting bias)	Low risk	All data reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Blinding of outcome assessor not specified

Martens 2013

Methods	Design: individual and RCT Follow-up: 1 month and 6 months Attrition: 4.9%, 6%
Participants	Age: mean = 20.10 years Sex: 65% women Ethnicity: 89% Caucasian Size: N = 254 for trial arms included in this review Allocation: PNF 121 and control 133 Country: USA
Interventions	Intervention: PNF Key components: In the PNF condition, the facilitator began by orienting the participant to the purpose of the session, indicating that the goal of the intervention was to

	discuss how the participant's own drinking and perception of typical drinking among other students compared with actual drinking norms. The facilitator then presented participants with a handout that specified two types of alcohol use measures (drinks per week and typical drinking days per week) for two different reference groups (college students nationwide and students at the university where the study was being conducted) . For each feedback component, participants were provided the following information: (1) self-reported alcohol use, (2) perceptions of alcohol use of the typical male student and the typical female student and (3) actual alcohol use of typical male and female students. Participants were also provided a percentile rank based on drinks per week. The components were covered in the following order: drinks per week for students nationwide, drinking days per week for students nationwide, drinks per week for students at the study institution and drinking days per week for students at the study institution Delivery: face-to-face Duration: 15 minutes to 20 minutes Control: protective behavioural strategies feedback (PBSF). In the PBSF condition, the facilitator began the session by indicating that the overall goal was to discuss strategies that minimised harmful effects that could occur as the result of alcohol use
Outcomes	Average drinks per week, average number of drinking days per week, peak blood alcohol concentration (BAC), alcohol-related problems, descriptive drinking norms
Funding and Declared Conflicts of Interest	No conflicts of interest declared. This project was supported by National Institutes of Health Grant R21AA016779
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Participants were randomly assigned, stratified by gender, via a random number table
Allocation concealment (selection bias)	Unclear risk	Insufficient information to allow a judgement
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition (6%)
Selective reporting (reporting bias)	Low risk	All alcohol outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Not possible to blind participants to intervention. Information insufficient for a judgement about blinding of interventionist
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Information insufficient to allow a judgement

McNally 2003

Methods	Design: cluster RCT Follow-up: 1 month Attrition: not discussed
Participants	Age: mean = 18.99 years Sex: 65% female Size: N = 76 Allocation: no information Country: USA
Interventions	Intervention: MI Key components: group-focused intervention through provision and discussion of normative and other alcohol information. Normative feedback: biphasic effect curve of alcohol, legal alcohol levels, definitions and statistical norms for episodic, heavy drinking, norms for general alcohol use among college students, tolerance, types of incidents of alcohol-related problems. Students were repeatedly asked to recall their own responses to questionnaire items as they considered the information presented Delivery: interview Duration: 30-minute assessment followed by 40-minute group intervention; 20- to 30-minute follow-up session Control: no intervention given
Outcomes	Quantity, binge and alcohol problems
Funding and Declared Conflicts of Interest	No information
Notes	No adjustment for clustering

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	"...Randomization table"
Allocation concealment (selection bias)	Unclear risk	Not discussed
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Attrition rate not stated
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Blinding of outcome assessor not specified

Michael 2006

Methods	Design: cluster RCT Follow-up: 30 days to 45 days Attrition: none
Participants	Age: mean = 18.35 years Sex: 62.5% female Size: N = 14 classes and 91 students Allocation: intervention 7 (47) and control 7 (44) Country: USA
Interventions	Intervention: MI counselling style Key components: decisional balance activity, discussion of perceived college student drinking in relation to normative data Delivery: brief group intervention. Normative feedback: perceptions of alcohol use, misperceptions of college-wide and nation-wide misperceptions about drinking, biological risk factors (e.g. tolerance) Duration: 2 x 50-minute and 1 x 75 minute MI sessions Control: no intervention given
Outcomes	30-day drinking frequency, 30-day drunkenness, 14-day drinking diary, RAPI
Funding and Declared Conflicts of Interest	No information
Notes	Randomly assigned by classes, no adjustment for clustering

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	Not discussed in this study
Incomplete outcome data (attrition bias) All outcomes	Low risk	No attrition
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Blinding of outcome assessor not specified

Moore 2013

Methods	Design: cluster RCT Follow-up: 3 months Attrition: N/A: post test only via survey of all students
Participants	Age: median = 19 years Sex: female 60.8% Size: N = 43 clusters (554 students) responded to the survey (response rate 14.6% of students) Allocation: intervention 261 and control 293 (students responded to the survey) Country: UK
Interventions	Intervention: social norms marketing campaign Components: social norm message was given by posters, drinks mats, glasses. Normative information: the intervention is a social norm marketing campaign to correct misperceptions regarding behaviours and social expectations of peers among first year students Delivery: marketing materials Duration: materials distributed in September 2011 and January 2012. Follow-up survey was given in February 2012 Control: assessment only.
Outcomes	Units/wk; AUDIT-C; risky drinking status; perceived norms
Funding and Declared Conflicts of Interest	This work was supported by an Alcohol Research UK grant funded by the Drinkaware Trust (grant reference CR 11/12 07 DA). Study authors declare no conflict of Interest
Notes	Post-test only design. Moore reported adequate adjustment for clustering

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Random number
Allocation concealment (selection bias)	Low risk	Blinded remote allocation
Incomplete outcome data (attrition bias) All outcomes	Low risk	Post-test survey responses only
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding not feasible for participants and personnel
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Computer-based survey

Moreira 2012

Methods	Design: RCT Follow-up: 6 months and 12 months Attrition: 49% at 6 months, 60% at 12 months
Participants	Age: majority 17 years to 24 years, 6% over 25 years Sex: 61.5% female Size: N = 1751 Allocation: 872 intervention and 879 control Country: UK
Interventions	Intervention: brief personalised normative feedback Key components: social normative feedback and general information on alcohol use and effects. Normative feedback: results of drinking behaviour assessment compared with average levels of drinking amongst student peer group Delivery: web-based Duration: N/A Control: assessment only
Outcomes	Frequency, quantity, binge drinking, AUDIT, alcohol-related problems, drinking norms
Funding and Declared Conflicts of Interest	Funded by a fellowship from the Portuguese Foundation for Science and Technology, and by Alcohol Research UK and the European Foundation for Alcohol Research. One study author declared that his Department has received funding from the alcohol industry for prevention projects, and that he is a Trustee of the alcohol-industry-funded Drinkaware Trust
Notes	Unpublished data

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	"Computer generated random numbers"
Allocation concealment (selection bias)	Low risk	"Concealed centrally-allocated computer generated random numbers"
Incomplete outcome data (attrition bias) All outcomes	High risk	Attrition = 49% at 6 months and 60% at 12 months
Selective reporting (reporting bias)	Low risk	All outcomes were reported on
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for the intervention
Blinding of outcome assessment (detection bias)	Low risk	Web-based anonymous administration

Moreira 2012 (*Continued*)

All outcomes		

Murphy 2001

Methods	Design: RCT Follow-up: 3 months and 9 months Attrition: 15%
Participants	Age: mean = 19.60 years Sex: 54% female Size: N = 99 heavy drinkers Allocation: no information Country: USA
Interventions	Intervention: based on BASICS Key components: individual MI, PNF. Normative feedback: student drinking patterns relative to normative college student drinking, BACs, alcohol-related problems and risk factors (e.g. family history of alcoholism) Delivery: individual BMI Duration: 50 minutes Control: AE session
Outcomes	Drinks per week, frequency of binge drinking
Funding and Declared Conflicts of Interest	No information
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	Not discussed in this study
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition (15%)
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Blinding of outcome assessor not specified

Neal 2004

Methods	Design: RCT Follow-up: 1 week Attrition: none
Participants	Age: not given Sex: 51% female Size: N = 61 at-risk students in the trial arms included in this review Allocation: 31 intervention and 30 control Country: USA
Interventions	Intervention: social norms intervention Key components: individual feedback, normative comparison data, nature and frequency of alcohol-related problems Delivery: PNF: individual face-to-face Duration: 45 minutes session I; 40 minutes session II Control: personal striving assessment
Outcomes	Drinking days, total drinks, binge episodes, peak consumption, drinks/drinking day
Funding and Declared Conflicts of Interest	Funded by NIAAA; no information on potential CoI
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	Not discussed in this study
Incomplete outcome data (attrition bias) All outcomes	Low risk	No attrition
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not discussed in this study

Neighbors 2004

Methods	Design: RCT Follow-up: 3 months and 6 months Attrition: 18% at 6 months
Participants	Age: not given Sex: 59% female Size: N = 252 heavy drinkers Allocation: 126 intervention and 126 control Country: USA
Interventions	Intervention: brief intervention Key components: computerised assessment, personalised feedback Delivery: web feedback Duration: n/a Control group: no intervention given
Outcomes	Alcohol consumption index (ACI), peak quantity, typical drinking (DDQ), RAPI, drinking norms rating form
Funding and Declared Conflicts of Interest	Funded by NIAAA and Alcohol and Drug Abuse Institute at the University of Washington; no information about potential CoI
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Not stated
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition (18%) and analysis of missing data showed no differential attrition effect
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Neighbors 2006

Methods	Design: RCT Follow-up: 2 months Attrition: 14%
Participants	Age: mean = 19.67 years Sex: 119 women Size: N = 214 high-risk students Allocation: 108 intervention and 106 control Country: USA
Interventions	Intervention: modelled on BASICS Key components: baseline assessment followed by personalised normative feedback delivered by computer Delivery: web feedback intervention Duration: no details Control: no intervention
Outcomes	DDQ, RAPI, DNRF
Funding and Declared Conflicts of Interest	Funded by NIAAA and North Dakota State University; no information about potential CoI
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	Not discussed in this study
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition at 6 months (14%)
Selective reporting (reporting bias)	Low risk	All data reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Blinding of outcome assessor not specified

Neighbors 2009

Methods	Design: RCT Follow-up: approximately 1 week after 21st birthday Attrition: 14.9%
Participants	Age: 20 years to 21 years Sex: 41.9% males Size: N = 295 drinkers Allocation: 150 intervention and 145 control Country: USA
Interventions	Intervention: web-based personalised feedback Key components: normative information, protective behaviours and personalised BAC information. Normative feedback: feedback about intended number of drinks on 21st birthday, resulting intended BAC and effects of alcohol at varying BACs. Participants were provided a printable personalised BAC chart based on gender and weight. In addition, participants received graphic feedback regarding perceived and actual descriptive norms (in this case 6.80 drinks) for drinking on 21st birthdays Delivery: web-based Duration: feedback document was nine pages long Control: assessment only control group
Outcomes	21st birthday drinking, BAC, weekly drinking
Funding and Declared Conflicts of Interest	Funded by NIAAA and Alcohol and Drug Abuse Institute at the University of Washington; no information about potential CoI
Notes	Uses intentional estimates as baseline data-validity of this approach unclear The study measured typical weekly drinking, but no data on follow-up for this outcome were reported

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Randomisation using URN procedure
Allocation concealment (selection bias)	Unclear risk	Not discussed
Incomplete outcome data (attrition bias) All outcomes	Low risk	Attrition = 14.9%
Selective reporting (reporting bias)	Unclear risk	Nearly all outcomes were reported on (weekly drinking follow-up results were not presented)
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants was not possible for the intervention

Neighbors 2009 (*Continued*)

Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Neighbors 2010

Methods	Design: RCT Follow-up: 6 months, 12 months, 18 months, 24 months Attrition: 7.70% at 6 months, 13.44% at 12 months, 16.13% at 18 months, 18.70% at 24 months
Participants	Age: mean = 18.16 years (SD = 0.6) Sex: 57.58% female Size: N = 818 (5 arms) heavy-drinking students Allocation: 654 intervention* and 164 control Country: USA
Interventions	Intervention: factorial design with four active interventions: gender-specific vs gender-non-specific feedback; single vs multiple feedback points Key components: information regarding one's own drinking behaviour, one's perception of other average same-sex students' drinking behaviour on the participating campus and other actual average same-sex students' drinking behaviour. Normative feedback: derived from BASICS, the feedback consisted of information regarding (1) one's own drinking behaviour, (2) one's perceptions of other students' drinking behaviour on the participating campus and (3) other students' self-reported drinking behaviour in text and bar graph formats Delivery: web-based Duration: 50 minutes Control: no intervention
Outcomes	Typical weekly drinking, heavy episodic drinking, RAPI, drinking norms ratings form
Funding and Declared Conflicts of Interest	Funded by NIAAA; no information about potential CoI
Notes	*A complex factorial design with five arms involving gender-specific and non-gender-specific feedback and single vs multiple feedback points. No systematic and clear differences were found across intervention groups, so these results were pooled for comparison with control in the MA

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	"Random assignment was administered automatically using a computer algorithm and occurred in blocks of five to keep cell sizes equal"

Neighbors 2010 (*Continued*)

Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition (19%)
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Web-based anonymous survey administration

Neighbors 2011

Methods	Design: individual and RCT Follow-up period: 3 months and 6 months Attrition: 11.9%
Participants	Age: mean ~18.7 years Sex: 76% males Size: N = 423 Allocation: PNF (N = 141); SNMA (N = 142); control (N = 140) Country: USA
Interventions	Intervention: emailed personalised feedback; emailed generic feedback Key components: PNF was presented in text and bar graph formats and consisted of three elements: (1) one's own drinking behaviour, (2) one's perceptions of other students' drinking behaviour and (3) other students' actual drinking behaviour Delivery: web-based Duration: no details Control: attention control (no alternative intervention, i.e. assessment only)
Outcomes	Self-reported alcohol use (DDQ); AUDIT score; alcohol-related consequences
Funding and Declared Conflicts of Interest	No conflict of interest stated. Research was supported by National Institute on Alcohol Abuse and Alcoholism Grant R01AA014576
Notes	Insufficient information presented in Results for inclusion in MA; study author contacted for additional details

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**

Neighbors 2011 (*Continued*)

Random sequence generation (selection bias)	Low risk	Computer algorithm with block randomisation
Allocation concealment (selection bias)	Unclear risk	Insufficient information
Incomplete outcome data (attrition bias) All outcomes	Low risk	Attrition 11.9%
Selective reporting (reporting bias)	High risk	Only consumption measures analysed and reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Paricipants not blinded
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Insufficient information

Palfai 2011

Methods	Design: RCT Follow-up: 1 month Attrition: not discussed
Participants	Age: mean = 18.6 years (SD = 1.45) Sex: 60% female Size: N = 119 Allocation: no information Country: USA
Interventions	Intervention: personalised normative feedback Key components: personalised feedback, normative data, information on costs, calories and peak BAC associated with heavy drinking episodes. Normative feedback: norms of total consumption and heavy drinking episodes that were university- and gender-specific, norms about low-frequency alcohol-related consequences (< 40%), which were personalised by highlighting specific consequences identified by each student Delivery: not discussed Duration: not discussed Control: assessment only, provided with information on health guidelines for sleep and consumption of fruits and vegetables
Outcomes	Drinking quantity and heavy drinking episodes (DDQ), Young Adult Alcohol Problems Screening Test-36
Funding and Declared Conflicts of Interest	Funded by NIAAA; study authors declared no conflict of interest

Palfai 2011 (*Continued*)

Notes	Study authors contacted for more detailed delivery and results information before inclusion in MA

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Not stated
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Attrition not reported
Selective reporting (reporting bias)	High risk	Not all outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not stated

Paschall 2011

Methods	Design: cluster RCT Follow-up: 6 months and 12 months Attrition: 6% universities lost to follow-up, evenly distributed between intervention and control
Participants	Age: mean = 18.7 years Sex: 55% female Size: N = 32 universities Allocation: 16 intervention and 16 control Country: USA
Interventions	Intervention: AlcoholEdu Key components: course content includes defining a standard drink, physiological effects of alcohol, the need to monitor blood alcohol level, social influences on alcohol use, alcohol laws, personalised normative feedback and alcohol harm reduction strategies. Students had to pass an exam after Part I to advance to Part II Delivery: web-based Duration: 2 hours to 3 hours Control: no intervention

Paschall 2011 (*Continued*)

Outcomes	Past-30-day alcohol use, average number of drinks per occasion and binge drinking
Funding and Declared Conflicts of Interest	Funded by NIAAA. CoI statement: "No financial disclosures were reported by the authors of this paper"
Notes	Clustering accounted for in multi-level analysis

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	No information
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Participants and interventionists not blind to study condition
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	No information

Patrick 2014

Methods	Design: RCT Follow-up: two weeks (post spring break) Attrition: N/A
Participants	Age: mean = aged 18-21 years Sex: 55% female Size: N = 271 individuals Allocation: N/A Country: USA
Interventions	Intervention: Spring Break web-based normative feedback Key components: computerised, internet-based feedback was generated by a process during which (1) Wave 1 baseline surveys gathered information about respondents; (2) a computer programme linked the data with algorithms used to select appropriate feedback messages based on individual baseline responses; and (3) the programme rendered messages into a specific format and generated individualised web pages based on baseline

Patrick 2014 (*Continued*)

	responses and decision-making rules for appropriate feedback Delivery: web-based Duration: N/A Control: no intervention, assessment only
Outcomes	Brief time-line follow-back and alcohol-related consequences
Funding and Declared Conflicts of Interest	Funded by NIAAA. No CoI statement
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	No information
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Not reported
Selective reporting (reporting bias)	Unclear risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for this intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	No information

Pederson 2012

Methods	Design: RCT Follow-up: not clear Attrition: 17% at final follow-up
Participants	Age: mean = 21.14 years (SD = 3.11) Sex: 78% female Size: 343 randomly assigned Allocation: not clear Country: USA students studying abroad
Interventions	Intervention: PNF with reference to country-specific norms for study-abroad students Key components: PNF contained two sets of three descriptive items accompanied by a figure: (1a) the number of drinks per week the individual intended to drink while

Pederson 2012 (*Continued*)

	abroad, (2a) the number of drinks per week that the individual perceived the typical student studying abroad in their host region drank and (3a) the number of drinks per week a typical student studying abroad in their host region actually drank. The second set of descriptive items focused on average drinks per occasion: (1b) the average number of drinks per occasion the individual intended to drink while abroad, (2b) the average number of drinks per occasion that the individual perceived the typical student studying abroad in their host region drank and (3b) the average number of drinks per occasion a typical student studying abroad in the host region actually drank Delivery: online Duration: not stated Control: assessment only
Outcomes	Past month consumption (DDQ); alcohol-related unintended consequences (RAPI); perceived peer norms
Funding and Declared Conflicts of Interest	No information
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Electronic randomisation
Allocation concealment (selection bias)	Low risk	Computer-based allocation
Incomplete outcome data (attrition bias) All outcomes	Low risk	17% attrition
Selective reporting (reporting bias)	Unclear risk	Not clear from paper
Blinding of participants and personnel (performance bias) All outcomes	High risk	Participants not blinded
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	No information

Ridout 2014

Methods	Design: RCT Follow-up: 1 month and 3 months Attrition: 3%

Ridout 2014 (*Continued*)

Participants	Age: mean = 19.05 years (SD = 1.78) Sex: 78% female Size: N = 95 high-risk drinkers Allocation: 47 intervention and 48 control Country: Australia
Interventions	Intervention: brief intervention Key components: both injunctive and descriptive norms calculated from classmates' survey questionnaire responses Means of delivery: Facebook private message Duration: brief feedback Control group: no intervention
Outcomes	Q/F measure; AUDIT questionnaire
Funding and Declared Conflicts of Interest	Funded by DBH PhD scholarship; no information about potential CoI
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Random number sequence in Excel
Allocation concealment (selection bias)	Unclear risk	No information
Incomplete outcome data (attrition bias) All outcomes	Low risk	Attrition 3%
Selective reporting (reporting bias)	Low risk	All outcomes were reported on
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Schaus 2009

Methods	Design: RCT Follow-up: 3 months, 6 months, 9 months and 12 months Attrition: 24% at 3 months, 42% at 6 months, 41% at 9 months, 35% at 12 months' follow-up
Participants	Age: mean = 20.6 years (SD = 2.7) Sex: 52% female Size: N = 363 high-risk drinkers Allocation: 181 intervention and 182 control Country: USA
Interventions	Intervention: brief intervention Key components: motivational feedback, personalised normative feedback, alcohol education and advice, reflection on own drinking. Normative feedback: summarising, participant's healthy lifestyle questionnaire responses; alcohol-related harms, alcohol expectancies; tolerance; use of protective behaviours, readiness-to-change, quantity and frequency of alcohol consumption, instructions on estimation of BAC using a BAC card and norms clarification by comparison of personal alcohol consumption with peer alcohol consumption Means of delivery: face-to-face Duration: two 20-minute BMI sessions, two weeks apart Control group: alcohol information leaflet
Outcomes	30-day drinking, typical estimated BAC, peak BAC, RAPI, drinker inventory of consequences-21 (DIC-21)
Funding and Declared Conflicts of Interest	Funded by NIAAA; no information about potential CoI
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Block Randomisation in SPSS v15, order of interventions varied randomly with each block. Randomisation stratified by gender
Allocation concealment (selection bias)	Low risk	The group assignment was placed into a sealed envelope
Incomplete outcome data (attrition bias) All outcomes	High risk	Attrition 24%, 42%, 41% and 35% at respective FUs
Selective reporting (reporting bias)	Low risk	All outcomes were reported on
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible in the intervention

Schaus 2009 (*Continued*)

Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Simão 2008

Methods	Design: RCT Follow-up: 12 months and 24 months Attrition: 1.1% at 12 months, 18.8% at 24 months (higher attrition in intervention group)
Participants	Age: 18 years or older, mean = 19.6, SD = 1.8 Sex: 56% male Size: N = 266 risky drinkers Allocation: 145 intervention and 121 control Country: Brazil
Interventions	Intervention: BASICS Key components: personalised normative feedback: comparison of consumption to clarify normal, alcohol-related problems identified and beliefs addressed, fact sheet based on individual gender and weight distributed Delivery: web-based Duration: 45 minutes to 60 minutes Control: assessment only
Outcomes	Frequency and quantity of drinking, peak drinking, AUDIT, RAPI, brief drinker profile (BDP), alcohol dependency scale (ADS)
Funding and Declared Conflicts of Interest	Funded by Fundaciao de Amparo 'a Pesquisa do Estado de S-ao Paulo (FAPESP); no information about potential CoI
Notes	Multi-variate analyses of variance for six variables at baseline showed a significant difference between treatment group and control group (P value 0.0014)

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	Not discussed
Incomplete outcome data (attrition bias) All outcomes	High risk	Attrition: intervention: 29.7% at 24 months, control: 9.3% at 24 months
Selective reporting (reporting bias)	Low risk	All outcomes reported on

Simão 2008 (*Continued*)

Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Terlecki 2010 Mandated

Methods	Design: RCT Follow-up: 4 weeks after intervention (6 weeks from baseline for control) Attrition: 17.6%
Participants	Age: 18 years to 24 years Sex: 62% male (across voluntary and mandated students) Size: N = 43 mandated students Allocation: 19 intervention and 24 control Country: USA
Interventions	Intervention: BASICS to mandated students Key components: personalised feedback and normative information and comparison. Normative feedback: personalised graphic feedback created on the basis of information collected during the assessment interview. Normative comparison of typical patterns of alcohol use and perceived norms, personalised review of drinking consequences, own weekly consumption and percentile rank in comparison with campus norms. Along with generic alcohol information and information on its effects Delivery: web-based Duration: 50 minutes Primary staff: N/A Control group: assessment only (2 groups: 1 for mandated intervention and 1 for voluntary intervention)
Outcomes	Quantity/frequency/peak drinking (DDQ), AUDIT, RAPI
Funding and Declared Conflicts of Interest	Funded by NIAAA. no information about potential conflicts
Notes	Baseline analysis revealed significant demographic differences between study groups on sex (P value < 0.00) where mandated students were significantly more likely to be males relative to their voluntary high-risk peers Interaction between treatment condition and referral status was significant for measures of typical consumption. Baseline scores on drinking outcomes were used as co-variates in the primary analysis to account for baseline differences

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**

Terlecki 2010 Mandated (*Continued*)

Random sequence generation (selection bias)	Unclear risk	Randomly assigned, but unclear how
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition (18%)
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Terlecki 2010 Voluntary

Methods	Design: RCT Follow-up: 4 weeks after intervention (6 weeks from baseline for control) Attrition: 17.6%
Participants	Age: 18 years to 24 years Sex: 62% male (across voluntary and mandated students) Size: N = 41 voluntary students Allocation: 21 intervention and 20 control Country: USA
Interventions	Intervention: BASICS to voluntary students Key components: personalised feedback and normative information and comparison. Normative feedback: personalised graphic feedback created on the basis of information collected during the assessment interview. Normative comparison of typical patterns of alcohol use and perceived norms, personalised review of drinking consequences, own weekly consumption and percentile rank in comparison with campus norms. Along with generic alcohol information and information on its effects Delivery: web-based Duration: 50 minutes Primary staff: N/A Control group: assessment only (2 groups: 1 for mandated intervention and 1 for voluntary intervention)
Outcomes	Quantity/frequency/peak drinking (DDQ), AUDIT, RAPI
Funding and Declared Conflicts of Interest	Funded by NIAAAl no information about potential conflicts
Notes	

Terlecki 2010 Voluntary (*Continued*)

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Randomly assigned, but unclear how
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition (18%)
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Turrisi 2009

Methods	Design: RCT Follow-up: 10 months Attrition: 14.5% at follow-up
Participants	Age: mean = 17.92 years (SD = 0.39) Sex: 44.4% males Size: N = 617 high-risk students in trial arms included in this review Allocation: 277 intervention and 340 control Country: USA
Interventions	Intervention: BASICS only Key components: personalised feedback. Normative feedback: actual and descriptive norms for drinking, its consequences, alcohol caloric consumption (based on reported typical drinking), personalised wallet-sized BAC card, perceived and descriptive norms and general information Delivery: face-to-face, mailed Duration: 45 minutes to 60 minutes for the BASICS-only intervention Control: assessment only
Outcomes	Peak BAC, typical weekly drinking (DDQ), RAPI, descriptive norms
Funding and Declared Conflicts of Interest	Funded by NIAAA; no information about potential CoI
Notes	

Turrisi 2009 (*Continued*)

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Computerised algorithm
Allocation concealment (selection bias)	Unclear risk	Not reported
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition (14.5%)
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not reported

Walters 2000

Methods	Design: RCT Follow-up: 6 weeks Attrition: 14%
Participants	Age: mean = 19.7 years Sex: 40% female Size: N = 43 heavy drinkers Allocation: no information Country: USA
Interventions	Intervention: based on Drinker's Check-Up Key components: baseline assessment followed by personalised normative feedback delivered by mail, peer norms, severity of drinking problems Delivery: mailed feedback intervention, motivational approach Duration: N/A Control: no intervention given
Outcomes	Q/F Index, SIP, AUDIT, CHUG, BAC, norms
Funding and Declared Conflicts of Interest	No information
Notes	
Risk of bias	

Walters 2000 (*Continued*)

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	Not discussed in this study
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition (14%)
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Blinding of outcome assessor not specified

Walters 2007

Methods	Design: RCT Follow-up: 8 weeks and 16 weeks Attrition: 28.3% at 8 weeks, 22.6% at 16 weeks
Participants	Age: not given Sex: 48.1% female Size: N = 106 heavy drinkers Allocation: no information Country: USA
Interventions	Intervention: based on Drinker's Check-Up Key components: baseline assessment followed by personalised normative feedback, peer norms, severity of drinking problems Delivery: web feedback intervention Duration: N/A Control: no intervention given
Outcomes	7-day drinking diary; peak BAC; RAPI; norms
Funding and Declared Conflicts of Interest	Funded by PRIME grant from the University of Texas School of Public Health; no information about potential CoI
Notes	

Risk of bias

Walters 2007 (*Continued*)

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	Not discussed in the study
Incomplete outcome data (attrition bias) All outcomes	High risk	Moderate attrition at 16 weeks (22.6%)
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Blinding of outcome assessor not specified

Walters 2009a

Methods	Design: RCT Follow-up: 3 months and 6 months Attrition: 10.4% at 3 months, 13.6% at 6 months
Participants	Age: mean = 19.8 years Sex: 64.2% female Size: N = 136 heavy drinkers in trial arms included in this review Allocation: 67 intervention and 69 control Country: USA
Interventions	Intervention: feedback only (FBO) and MI with feedback (MIF) arms Key components: feedback only arm: summary of drinking behaviour, compared with US campus and adult norms. Risk levels and estimated amount (USD) and income (%) spent. Normative feedback: 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 with US adult and campus norms, (3) level of risk (e.g. AUDIT score, tolerance, estimated genetic risk), (4) estimated dollar amount and percentage of income spent on alcohol and (5) local referral resources Delivery: web-based (FBO) or individual face-to-face (MIF) Duration: FBO arm: not discussed; MIF arm: mean length of 50.09 minutes Control: assessment only
Outcomes	7-day drinking diary, peak BAC, RAPI, AUDIT
Funding and Declared Conflicts of Interest	Funded by NIAAA; no information about potential CoI

Walters 2009a (*Continued*)

Notes		
Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Insufficient information to permit judgement
Allocation concealment (selection bias)	Low risk	Participants and investigators enrolling participants could not foresee assignment because of central allocation by computer
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition (10.4%). Intention-to-treat analysis performed
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Participants and counsellors were not blind to the group assignment
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Insufficient information to permit judgement

Werch 2000

Methods	Design: RCT Follow-up: 1 month Attrition: 18%
Participants	Age: not given Sex: 64% female Size: N = 634 heavy drinkers Allocation: 317 intervention and 317 control Country: USA
Interventions	Intervention: social norms campaign Key components: observational learning and prevention messages targeting social norms Delivery: brief card marketing campaign Duration: 20 minutes Control: AE session
Outcomes	Frequency, quantity, binge, drunkenness, condom use, consequences of drinking, stages of initiating drinking

Werch 2000 (*Continued*)

Funding and Declared Conflicts of Interest	Funded by US Department of Education and Brooks Health Foundation; no information about potential CoI
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	Not reported
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition (18%)
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Blinding of outcome assessor not specified

Wilke 2014

Methods	Design: Cluster RCT, by fraternity / sorority house Follow-up: 3 months Attrition: 80% (data cleaning led to removal of substantial number of respondents reporting high levels of consumption, with more removed from the intervention group)
Participants	Age: 20 years on average Sex: 39% of sample from fraternity houses Size: N = 4 houses and N = 991 individuals Allocation: N = 442 individuals in the intervention N = 549 individuals in the control (unclear re: group allocation) Country: USA
Interventions	Intervention: personalised normative feedback Key components: comparison of drinking with campus norms, within a motivational interview Delivery: face-to-face Duration: 10 minutes to 15 minutes Control: existing alcohol awareness programming on campus, which includes a social norms marketing campaign and required risk management educational programmes on

Wilke 2014 (*Continued*)

	high-risk drinking and related consequences
Outcomes	Estimated blood alcohol concentration and alcohol problems
Funding and Declared Conflicts of Interest	Funded by Social Sciences Program Enhancement Grant from the Florida State University (FSU) Council on Research and Creativity. No information or declarations about potential conflicts of interest
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No information
Allocation concealment (selection bias)	Unclear risk	No information
Incomplete outcome data (attrition bias) All outcomes	High risk	High attrition (80%)
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Participants unblinded. No information about blinding of MI counsellors
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	No information

Wood 2007

Methods	Design: RCT Follow-up: 1 month, 3 months and 6 months Attrition: not discussed
Participants	Age: 20 years to 24 years Sex: 52.5% female Size: N = 335 Allocation: no information Country: USA
Interventions	Programme type: BMI Key components: a personalised feedback report, generated from student's responses on the baseline assessment, was presented to guide the discussion, which focused on normative information, alcohol-related consequences and risk factors such as family history of alcoholism (as appropriate). Average weekly calories consumed from alcohol

Wood 2007 (*Continued*)

	and money spent on alcohol per semester were also included in the feedback report Delivery: individual face-to-face Duration: 45 minutes to 60 minutes Control group: no intervention given
Outcomes	Q-F, heavy drinking and problems from 36-item Young Adult Alcohol Problems Screening Test (YAAPST)
Funding and Declared Conflicts of Interest	Funded by NIAAA; no information about potential CoI
Notes	Insufficient details for MA; study authors contacted for mean scores and SDs for outcomes

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Not stated
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Attrition not described
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not stated

Wood 2010

Methods	Design: RCT Follow-up: 10 months and 22 months Attrition: 9.2% at 10 months, 16% at 22 months.
Participants	Age: mean age = 18.4 years (SD = 0.41) Sex: 57% female (N = 580) Size: N = 509 parent/student dyads in trial arms included in this review Allocation: 253 intervention and 256 control Country: USA

Wood 2010 (*Continued*)

Interventions	Intervention: BMI (BASICS) and booster session Key components: personalised normative feedback. Normative feedback: individualised feedback used to guide BMI sessions. Feedback on alcohol use, consequences, socio-environmental influences, personal drinking patterns, HED, BAC, alcohol expectancies, peer and environmental influences on alcohol use, drinking norms. Self-regulation and harm-reduction strategies were discussed Delivery: individual face-to-face Duration: 45 minutes to 60 minutes, booster session of 20 minutes to 30 minutes Control group: assessment only
Outcomes	Heavy episodic drinking, drinking frequency and quantity from 17-item version of the Young Adult Alcohol Problems Screening Test
Funding and Declared Conflicts of Interest	No information
Notes	SEM model results reported-not in right format for MA. Study authors contacted

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	"Urn randomization by computer algorithm"
Allocation concealment (selection bias)	Unclear risk	Not stated
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition (16%)
Selective reporting (reporting bias)	Low risk	All outcomes reported
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and personnel not possible for the intervention
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Interviewers were blind to experimental condition

Abbreviations:
ACI: alcohol consumption inventory.
ADS: alcohol dependency scale.
ADU: alcohol and drug use.
AE: alcohol education.
AI: alcohol information.
APS: alcohol problems scale.
AREAS: academic role expectations and alcohol scale.

AUDIT: alcohol use disorders identification scale.
BAC: blood alcohol concentration.
BAL: blood alcohol level.
BASICS: brief alcohol screening and intervention of college students.
BDP: brief drinker profile.
BMI: brief motivational interview.
CAGE: **C**ut-down; **A**nnoyed; **G**uilty; **E**ye-opener
CHUG: Check-Up To Go
CoI: conflict of interest.
CRCT: Cluster Randomized Contriolled Trial.
DDQ: daily drinking questionnaire.
DIC-21: drinker inventory of consequences.
DNRF: drinking norms rating form
e-CHUG: Electronic-Check Up To Go
e-SBI: email-based Internet alcohol intervention.
FU: follow-up.
GMET: group motivational enhancement therapy.
IDS: inventory of drinking situations.
ITT: intention-to-treat.
LDQ: Leeds Dependence Questionnaire.
MA: Meta-Analysis.
MET-MATCH: Motivational Enhancement Therapy, Project MATCH.
MI: motivational interview.
NIAAA: National Institute on Alcohol Abuse and Alcoholism.
PBSF: protective behavioural strategies feedback.
PNF: personalised normative feedback.
QFS: quantity-frequency scale.
RAPI: Rutgers Alcohol Problem Index.
RCT: randomised controlled trial.
RDD: retrospective drinking diary.
SAU: services as usual.
SD: standard deviation.
SEM: Structural Equation Modelling.
SNMA: Social Norms Marketing Approach.
SPSS: Statistical Package for the Social Sciences.
UAP: university assistance programme.
YAAPST: young adult alcohol problems screening test.

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Abbey 2009	Have not evaluated social norms interventions/any interventions but made suggestions for their use
Agostinelli 1995	Marked differences at baseline between intervention and control groups in number of variables, indicating failed randomisation
Andersson 2009	Does not evaluate reduction in misuse or misperceptions after intervention, rather describes drinking misuse patterns and misperceptions

(*Continued*)

Baer 1992	No social norms intervention
Barnett 1996	Process of randomisation failed
Barnett 2007	Both groups received a social norms intervention
Bendtsen 2006	Not an RCT
Bertholet 2011	Not an RCT
Borsari 2009	Not an RCT
Bush 2013	No control condition
Bustamante 2009	Not an RCT
Capone 2009	Does not appear to evaluate use of SN intervention vs control but instead the association of factors such as 'readiness to change,' 'need for change' and 'impulsivity/sensation-seeking (IMPSS)' with effect of SN intervention
Carey 2009	Both arms in the RCT received some sort of social norms feedback
Cimini 2009	No appropriate control group. All three arms of the study included a social norms component
Collins 2005	No alcohol outcomes
Collins 2009	Not an RCT
Collins 2010	Seems not to be evaluating the effectiveness of social norms intervention but instead the predictability of the 'readiness to change questionnaire'
Coronges 2009	Not university students
Cronce 2010	Not an RCT
Cunningham 2008	Protocol only
Cunningham 2013	Insufficient follow-up
Curtin 2001	Feedback group without a social norms intervention
Dimeff 2000	Not a true randomisation. Students were asked if they wanted the intervention
Doumas 2008b	No university students
Doumas 2011	Comparison between two social norms interventions, no appropriate control group for this review
Ehlert 2010	Not alcohol related

(*Continued*)

Epstein 2008	Not university students, no social norms intervention
Fleming 2010	No social norms intervention
Frone 2010	Not an RCT, no university students, no social norms intervention
Genannt 2008	Not alcohol-related
Ghandour 2009	Not an RCT, no social norms intervention
Graham 2004	Not an RCT
Granfield 2002	Not an RCT
Granfield 2005	Not an RCT
Gregory 2001	All three groups received a social norms intervention that was included in the skills workbook
Grossbard 2010	No alcohol-related outcomes. Evaluates secondary effects of alcohol intervention on illicit drug use
Hallett 2009	Does not evaluate the intervention, rather the development of one
Hanewinkel 2005	Not an RCT
Huchting 2008	Not an RCT
Hustad 2009	Both study arms contained a social norms component
Jacobs-Priebe 2008	Not alcohol-related
Kearney 2013	Not an RCT
Kerksiek 2008	Not an RCT, not a social norms intervention
Kwan 2010	Not university students
Kypri 2003	No social norms relevant outcomes
Kypri 2007	No normative feedback group
LaBrie 2007	Not an RCT
LaBrie 2008	Both study arms had social norms component, hence no appropriate control group
LaBrie 2009	Not an RCT
LaBrie 2010a	Not an RCT

(*Continued*)

LaBrie 2010b	Not alcohol-related
Larimer 2007	Social norms media campaign on campus at same time as the RCT, indicates contamination of the control group
Larimer 2009	Not an RCT
Lysaught 2004	No between-group analysis results reported, no alcohol outcomes measures available
Mallett 2010	Duplicate study (Larimer 2009)
Maney 2002	Not an RCT
Martens 2007	Not an RCT
Mastroleo 2010	Does not evaluate social norms intervention but instead the use of supervision post training in peer counselling groups
McCambridge 2008a	Not a social norms intervention
McCambridge 2008b	Not alcohol-related
Moreira 2008	Not an RCT: review article
Murphy 2004	Both groups received a social norms intervention
Murphy 2005	Both groups received a social norms intervention
Murphy 2012	Protocol only
Nye 1997	No alcohol or social norms outcomes reported
Prince 2010	Does not evaluate the intervention but looks at the correlation between injunctive norms manipulation and different reference groups
Ragsdale 2010	Not alcohol-related
Reilly 2008	Both study arms had social norms component
Saitz 2007	Both groups received a social norms intervention
Schulenberg 2001	No PNF data reported
Scribner 2011	Not an RCT
Segal 2009	Not a social norms intervention

(*Continued*)

Smith 2004	Social norms media campaign on campus at same time as the RCT, indicates contamination of the control group
Spijkerman 2010	Not university students
Stamper 2004	Social norms media campaign on campus at same time as the RCT, indicates contamination of the control group
Steffian 1999	Not an RCT
Ståhlbrandt 2007	No social norms intervention
Sugarman 2009	No social norms intervention
Tevyaw 2007	Both groups received a social norms intervention
Thombs 2002	Not an RCT
Tollison 2008	Not an RCT
Trocker 2004	Process of randomisation failed
Turner 2008	Intervention was delivered campus-wide, therefore no appropriate control group for the purpose of this review
Vernig 2009	Not a social norms intervention
Walker 2002	Not an RCT
Walters 2009b	Not a social norms intervention
Werch 2008	Not a social norms intervention
Werch 2010	Not a social norms intervention
White 2006	Not a true control group
White 2007	Both groups received a social norms intervention
White 2008	No group randomly assigned to non-SNF control
Wild 2007	No university or college students
Young 2010	Not an RCT

Characteristics of studies awaiting assessment *[ordered by study ID]*

Croom 2009

Methods	Design: randomised controlled trial Follow-up: 4 weeks to 6 weeks Attrition: 41%
Participants	Age: 94% 17 years to 18 years Sex: 51% female Size: N = 3216 students Allocation: 1608 in each arm Country: USA
Interventions	AlcoholEDU online course; details of social normative component not clear
Outcomes	Prevalence of alcohol use; high-risk behaviour; protective behaviour; harm experienced
Notes	Unclear whether this version of AlcoholEDU contained the normative feedback component that appeared in later versions

Whiteside 2010

Methods	Design: randomised controlled trial Follow-up: 3 months Attrition: no details
Participants	Age: no details Sex: no details Size: N = 103 students in relevant arms Allocation: no details Country: USA
Interventions	BASICS vs relaxation control condition; no further details
Outcomes	Insufficient information
Notes	Awaiting copy of full dissertation from study author

DATA AND ANALYSES

Comparison 1. Social norms (SN) vs control

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Alcohol-related problems: up to 3 months	37		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.1 Mailed feedback	6	1045	Std. Mean Difference (IV, Random, 95% CI)	0.10 [-0.02, 0.22]
1.2 Web feedback	21	10166	Std. Mean Difference (IV, Random, 95% CI)	-0.15 [-0.26, -0.05]
1.3 Individual face-to-face	8	1205	Std. Mean Difference (IV, Random, 95% CI)	-0.14 [-0.27, -0.00]
1.4 Group face-to-face	4	382	Std. Mean Difference (IV, Random, 95% CI)	-0.16 [-0.42, 0.10]
2 Alcohol-related problems: 4+ months	30		Std. Mean Difference (Random, 95% CI)	Subtotals only
2.1 Mailed feedback	1	64	Std. Mean Difference (Random, 95% CI)	-0.34 [-0.83, 0.15]
2.2 Web feedback	15	11767	Std. Mean Difference (Random, 95% CI)	-0.04 [-0.11, 0.02]
2.3 Individual face-to-face	11	2327	Std. Mean Difference (Random, 95% CI)	-0.14 [-0.24, -0.04]
2.4 Group face-to-face	1	126	Std. Mean Difference (Random, 95% CI)	-0.62 [-0.97, -0.26]
2.5 Marketing campaign	2	4943	Std. Mean Difference (Random, 95% CI)	-0.03 [-0.17, 0.10]
3 Binge drinking: up to 3 months	26	10667	Std. Mean Difference (Random, 95% CI)	-0.17 [-0.24, -0.09]
3.1 Mailed feedback	2	615	Std. Mean Difference (Random, 95% CI)	-0.07 [-0.51, 0.36]
3.2 Web feedback	14	8744	Std. Mean Difference (Random, 95% CI)	-0.15 [-0.24, -0.06]
3.3 Individual face-to-face	6	932	Std. Mean Difference (Random, 95% CI)	-0.21 [-0.35, -0.07]
3.4 Group face-to-face	5	376	Std. Mean Difference (Random, 95% CI)	-0.28 [-0.48, -0.07]
4 Binge drinking: 4+ months	16	11292	Std. Mean Difference (Random, 95% CI)	-0.06 [-0.11, -0.02]
4.1 Mailed feedback	1	65	Std. Mean Difference (Random, 95% CI)	-0.17 [-0.66, 0.32]
4.2 Web feedback	10	10719	Std. Mean Difference (Random, 95% CI)	-0.07 [-0.12, -0.02]
4.3 Individual face-to-face	5	508	Std. Mean Difference (Random, 95% CI)	0.01 [-0.17, 0.18]
5 Quantity of drinking: up to 3 months	45	14184	Std. Mean Difference (IV, Random, 95% CI)	-0.14 [-0.19, -0.09]
5.1 Mailed feedback	5	1020	Std. Mean Difference (IV, Random, 95% CI)	-0.04 [-0.21, 0.13]
5.2 Web feedback	28	10889	Std. Mean Difference (IV, Random, 95% CI)	-0.12 [-0.18, -0.07]
5.3 Individual face-to-face	8	1309	Std. Mean Difference (IV, Random, 95% CI)	-0.24 [-0.38, -0.11]
5.4 Group face-to-face	5	411	Std. Mean Difference (IV, Random, 95% CI)	-0.30 [-0.49, -0.10]
5.5 Marketing campaign	1	555	Std. Mean Difference (IV, Random, 95% CI)	-0.05 [-0.22, 0.11]
6 Quantity of drinking: 4+ months	32	21169	Std. Mean Difference (Random, 95% CI)	-0.08 [-0.12, -0.04]
6.1 Mailed feedback	2	533	Std. Mean Difference (Random, 95% CI)	-0.13 [-0.32, 0.06]
6.2 Web feedback	18	13319	Std. Mean Difference (Random, 95% CI)	-0.07 [-0.12, -0.02]
6.3 Individual face-to-face	12	2374	Std. Mean Difference (Random, 95% CI)	-0.15 [-0.23, -0.08]
6.4 Marketing campaign	2	4943	Std. Mean Difference (Random, 95% CI)	-0.02 [-0.13, 0.09]
7 Frequency: up to 3 months	19		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
7.1 Mailed feedback	1	521	Std. Mean Difference (IV, Random, 95% CI)	0.12 [-0.05, 0.29]
7.2 Web feedback	12	6385	Std. Mean Difference (IV, Random, 95% CI)	-0.17 [-0.25, -0.09]
7.3 Individual face-to-face	4	515	Std. Mean Difference (IV, Random, 95% CI)	-0.45 [-0.63, -0.28]
7.4 Group face-to-face	3	264	Std. Mean Difference (IV, Random, 95% CI)	-0.03 [-0.27, 0.21]
8 Frequency: 4+ months	25		Std. Mean Difference (Random, 95% CI)	Subtotals only
8.1 Web feedback	10	9929	Std. Mean Difference (Random, 95% CI)	-0.11 [-0.17, -0.04]
8.2 Individual face-to-face	8	1464	Std. Mean Difference (Random, 95% CI)	-0.21 [-0.31, -0.10]
8.3 Group face-to-face	5	449	Std. Mean Difference (Random, 95% CI)	-0.26 [-0.54, 0.02]

8.4 Marketing campaign	2	4943	Std. Mean Difference (Random, 95% CI)	-0.01 [-0.09, 0.06]
9 Peak BAC: up to 3 months	11	1902	Std. Mean Difference (IV, Random, 95% CI)	-0.22 [-0.33, -0.11]
9.1 Mailed feedback	1	94	Std. Mean Difference (IV, Random, 95% CI)	-0.20 [-0.60, 0.21]
9.2 Web feedback	4	477	Std. Mean Difference (IV, Random, 95% CI)	-0.13 [-0.35, 0.09]
9.3 Individual face-to-face	7	1331	Std. Mean Difference (IV, Random, 95% CI)	-0.26 [-0.39, -0.13]
10 Peak BAC: 4+ months	11	7198	Std. Mean Difference (IV, Random, 95% CI)	-0.08 [-0.17, 0.00]
10.1 Mailed feedback	1	468	Std. Mean Difference (IV, Random, 95% CI)	-0.13 [-0.33, 0.08]
10.2 Web feedback	3	355	Std. Mean Difference (IV, Random, 95% CI)	-0.08 [-0.29, 0.13]
10.3 Individual face-to-face	7	1432	Std. Mean Difference (IV, Random, 95% CI)	-0.16 [-0.26, -0.05]
10.4 Marketing campaign	2	4943	Std. Mean Difference (IV, Random, 95% CI)	0.02 [-0.18, 0.21]
11 Typical BAC: up to 3 months	8	1336	Std. Mean Difference (IV, Random, 95% CI)	-0.17 [-0.31, -0.03]
11.1 Mailed feedback	3	253	Std. Mean Difference (IV, Random, 95% CI)	-0.10 [-0.35, 0.15]
11.2 Web feedback	1	282	Std. Mean Difference (IV, Random, 95% CI)	-0.25 [-0.48, -0.01]
11.3 Individual face-to-face	4	801	Std. Mean Difference (IV, Random, 95% CI)	-0.14 [-0.40, 0.12]
12 Typical BAC: 4+ months	4		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
12.1 Individual face-to-face	4	490	Std. Mean Difference (IV, Random, 95% CI)	-0.08 [-0.26, 0.10]
13 Drinking norms: up to 3 months	14		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
13.1 Mailed feedback	2	698	Std. Mean Difference (IV, Random, 95% CI)	-0.21 [-0.56, 0.14]
13.2 Web feedback	8	1196	Std. Mean Difference (IV, Random, 95% CI)	-0.51 [-0.71, -0.31]
13.3 Group face-to-face	3	297	Std. Mean Difference (IV, Random, 95% CI)	-0.44 [-0.84, -0.04]
13.4 Individual face-to-face	1	244	Std. Mean Difference (IV, Random, 95% CI)	-1.40 [-1.68, -1.12]
14 Drinking norms: 4+ months	9		Std. Mean Difference (Random, 95% CI)	Subtotals only
14.1 Web feedback	6	2227	Std. Mean Difference (Random, 95% CI)	-0.34 [-0.57, -0.11]
14.2 Individual face-to-face	1	240	Std. Mean Difference (Random, 95% CI)	-1.19 [-1.47, -0.92]
14.3 Marketing campaign	2	4943	Std. Mean Difference (Random, 95% CI)	-0.06 [-0.23, 0.11]

Analysis 1.1. Comparison 1 Social norms (SN) vs control, Outcome 1 Alcohol-related problems: up to 3 months.

Review: Social norms information for alcohol misuse in university and college students

Comparison: 1 Social norms (SN) vs control

Outcome: 1 Alcohol-related problems: up to 3 months

Study or subgroup	Social Norms Intervention N	Mean(SD)	Comparison N	Mean(SD)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
1 Mailed feedback							
Collins 2002	47	7.83 (6.67)	47	7.91 (5.69)		9.0 %	-0.01 [-0.42, 0.39]
Geisner 2007	89	5.03 (8.53)	88	5.24 (7.89)		17.0 %	-0.03 [-0.32, 0.27]
Ju rez 2006	20	5.6 (5.08)	21	4.28 (4.21)		3.9 %	0.28 [-0.34, 0.89]
Lewis 2008	90	2.64 (3.89)	97	2.33 (3.84)		17.9 %	0.08 [-0.21, 0.37]
Walters 2000	11	6 (3.19)	14	4.86 (3.48)		2.3 %	0.33 [-0.47, 1.12]
Werch 2000	266	2.7 (4)	255	2.2 (3.1)		49.9 %	0.14 [-0.03, 0.31]
Subtotal (95% CI)	**523**		**522**			**100.0 %**	**0.10 [-0.02, 0.22]**
Heterogeneity: Tau² = 0.0; Chi² = 1.85, df = 5 (P = 0.87); I² =0.0%							
Test for overall effect: Z = 1.56 (P = 0.12)							
2 Web feedback							
Bendtsen 2012	697	7.3 (5.9)	737	6.9 (5.5)		7.3 %	0.07 [-0.03, 0.17]
Bewick 2008a	138	1.57 (1.11)	179	1.55 (1.36)		5.9 %	0.02 [-0.21, 0.24]
Bryant 2013	101	2.58 (3.72)	90	3.34 (5.52)		5.0 %	-0.16 [-0.45, 0.12]
Butler 2009	30	5.76 (3.7793)	26	7.59 (3.7733)		2.6 %	-0.48 [-1.01, 0.06]
Collins 2014	242	4.77 (6.16)	231	5.06 (6.98)		6.4 %	-0.04 [-0.22, 0.14]
Doumas 2009a	37	1.38 (2.27)	24	1.54 (3.27)		2.8 %	-0.06 [-0.57, 0.46]
Doumas 2009b	18	1.83 (2.43)	34	2.81 (4.21)		2.4 %	-0.26 [-0.83, 0.31]
Kypri 2004	42	2.36 (1.82)	41	3.54 (2.2)		3.3 %	-0.58 [-1.02, -0.14]
Kypri 2009	962	2.4 (2.1)	942	2.5 (2.2)		7.5 %	-0.05 [-0.14, 0.04]
LaBrie 2013	147	4.5 (8.5)	148	4.3 (8.9)		5.8 %	0.02 [-0.21, 0.25]
Lewis 2014	119	6.31 (5.38)	121	7.64 (5.38)		5.4 %	-0.25 [-0.50, 0.01]
Lovecchio 2010	741	1.47 (1.25)	550	2.16 (1.09)		7.3 %	-0.58 [-0.69, -0.47]
Neighbors 2004	126	4.99 (5.21)	126	7.29 (7.49)		5.5 %	-0.36 [-0.60, -0.11]
Neighbors 2006	58	5.69 (6.43)	61	6.4 (8.05)		4.1 %	-0.10 [-0.46, 0.26]

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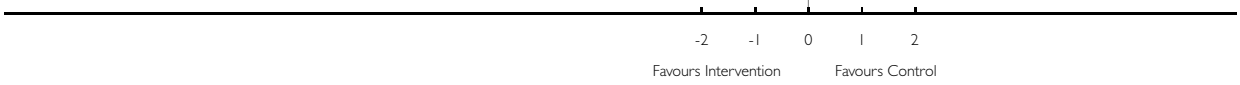
Study or subgroup	Social Norms Intervention N	Mean(SD)	Comparison N	Mean(SD)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
Paschall 2011	1310	3.61 (10.16)	1496	4.67 (10.09)		7.6 %	-0.10 [-0.18, -0.03]
Patrick 2014	88	3.23 (3.77)	85	3.02 (3.99)		4.9 %	0.05 [-0.24, 0.35]
Pederson 2012	67	2.6866 (3.71406)	72	2.44 (4.19553)		4.4 %	0.06 [-0.27, 0.39]
Terlecki 2010 Mandated	19	7.57 (6)	24	8.41 (8.12)		2.2 %	-0.11 [-0.72, 0.49]
Terlecki 2010 Voluntary	22	10.23 (11.2)	19	14.05 (9.34)		2.1 %	-0.36 [-0.98, 0.26]
Walters 2007	37	1.73 (2.7)	39	2.75 (3.77)		3.2 %	-0.31 [-0.76, 0.15]
Walters 2009a	57	4.84 (4.67)	63	5.1 (5.09)		4.1 %	-0.05 [-0.41, 0.31]
Subtotal (95% CI)	**5058**		**5108**			**100.0 %**	**-0.15 [-0.26, -0.05]**
Heterogeneity: $Tau^2 = 0.04$; $Chi^2 = 98.33$, df = 20 (P<0.00001); $I^2 = 80\%$							
Test for overall effect: Z = 2.80 (P = 0.0052)							
3 Individual face-to-face							
Borsari 2005	31	5.9 (5.56)	30	5.73 (4.84)		6.4 %	0.03 [-0.47, 0.53]
Butler 2009	28	5.43 (3.757)	26	7.59 (3.7733)		5.5 %	-0.57 [-1.11, -0.02]
Carey 2006	84	5.9 (6.6)	79	8.5 (6.7)		14.3 %	-0.39 [-0.70, -0.08]
Carey 2011	155	3.61 (5.8)	170	3.65 (4.17)		23.5 %	-0.01 [-0.23, 0.21]
Murphy 2001	30	7.23 (3.81)	24	7.78 (4.19)		5.6 %	-0.14 [-0.67, 0.40]
Schaus 2009	128	6.22 (6.08)	147	7.8 (7.48)		20.9 %	-0.23 [-0.47, 0.01]
Walters 2009a	70	5.2 (5.35)	63	5.1 (5.09)		12.4 %	0.02 [-0.32, 0.36]
Wilke 2014	44	4.2 (5.454)	96	4.09 (6.04)		11.5 %	0.02 [-0.34, 0.38]
Subtotal (95% CI)	**570**		**635**			**100.0 %**	**-0.14 [-0.27, 0.00]**
Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 8.82$, df = 7 (P = 0.27); $I^2 = 21\%$							
Test for overall effect: Z = 2.02 (P = 0.044)							
4 Group face-to-face							
Henslee 2009	60	8.9 (4.39)	52	8.83 (4.9)		28.3 %	0.02 [-0.36, 0.39]
LaChance 2009	68	8.14 (8.79)	58	12.44 (11.46)		29.9 %	-0.42 [-0.78, -0.07]
McNally 2003	24	4.25 (4.27)	29	5.89 (5.16)		16.9 %	-0.34 [-0.88, 0.21]
Michael 2006	47	5.1 (5.7)	44	4.6 (5.9)		25.0 %	0.09 [-0.33, 0.50]
Subtotal (95% CI)	**199**		**183**			**100.0 %**	**-0.16 [-0.42, 0.10]**
Heterogeneity: $Tau^2 = 0.03$; $Chi^2 = 4.75$, df = 3 (P = 0.19); $I^2 = 37\%$							
Test for overall effect: Z = 1.20 (P = 0.23)							
Test for subgroup differences: $Chi^2 = 10.90$, df = 3 (P = 0.01), $I^2 = 72\%$							

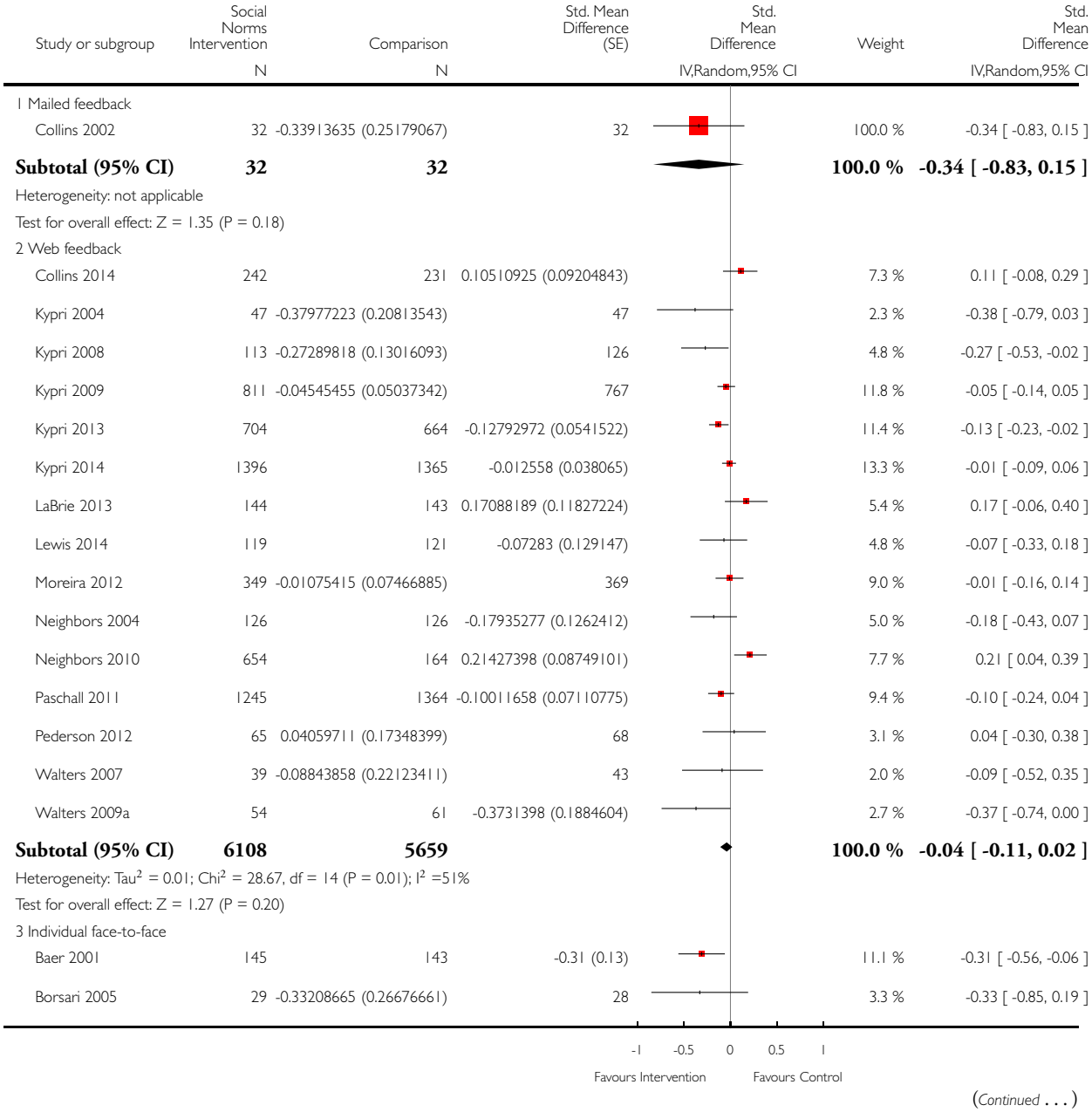


Analysis 1.2. Comparison 1 Social norms (SN) vs control, Outcome 2 Alcohol-related problems: 4+ months.

Review: Social norms information for alcohol misuse in university and college students

Comparison: 1 Social norms (SN) vs control

Outcome: 2 Alcohol-related problems: 4+ months



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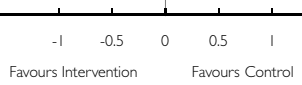
Study or subgroup	Social Norms Intervention N	Comparison N	Std. Mean Difference (SE)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
Carey 2006	64	-0.11645266 (0.18063576)	59		6.6 %	-0.12 [-0.47, 0.24]
Eggleston 2008	29	0.08807496 (0.38170137)	9		1.7 %	0.09 [-0.66, 0.84]
Larimer 2001	77	-0.09481761 (0.15877785)	82		8.1 %	-0.09 [-0.41, 0.22]
Marlatt 1998	143	-0.34693856 (0.11663852)	156		13.0 %	-0.35 [-0.58, -0.12]
Martens 2013	112	-0.12382322 (0.12951067)	128		11.2 %	-0.12 [-0.38, 0.13]
Murphy 2001	30	0.10629808 (0.27405223)	24		3.1 %	0.11 [-0.43, 0.64]
Schaus 2009	111	125	-0.27050729 (0.1310116)		11.0 %	-0.27 [-0.53, -0.01]
Sim o 2008	103	113	0.08458289 (0.1362896)		10.4 %	0.08 [-0.18, 0.35]
Turrisi 2009	277	-0.01503067 (0.08094114)	340		20.6 %	-0.02 [-0.17, 0.14]
Subtotal (95% CI)	**1120**	**1207**			**100.0 %**	**-0.14 [-0.24, -0.04]**
Heterogeneity: Tau² = 0.01; Chi² = 12.72, df = 10 (P = 0.24); I² =21%						
Test for overall effect: Z = 2.78 (P = 0.0055)						
4 Group face-to-face						
LaChance 2009	68	-0.61536928 (0.1828933)	58		100.0 %	-0.62 [-0.97, -0.26]
Subtotal (95% CI)	**68**	**58**			**100.0 %**	**-0.62 [-0.97, -0.26]**
Heterogeneity: not applicable						
Test for overall effect: Z = 3.36 (P = 0.00077)						
5 Marketing campaign						
DeJong 2006	1536	1365	-0.1 (0.0372205)		51.5 %	-0.10 [-0.17, -0.03]
DeJong 2009	979	1063	0.03961817 (0.04430089)		48.5 %	0.04 [-0.05, 0.13]
Subtotal (95% CI)	**2515**	**2428**			**100.0 %**	**-0.03 [-0.17, 0.10]**
Heterogeneity: Tau² = 0.01; Chi² = 5.82, df = 1 (P = 0.02); I² =83%						
Test for overall effect: Z = 0.46 (P = 0.64)						
Test for subgroup differences: Chi² = 12.68, df = 4 (P = 0.01), I² =68%						

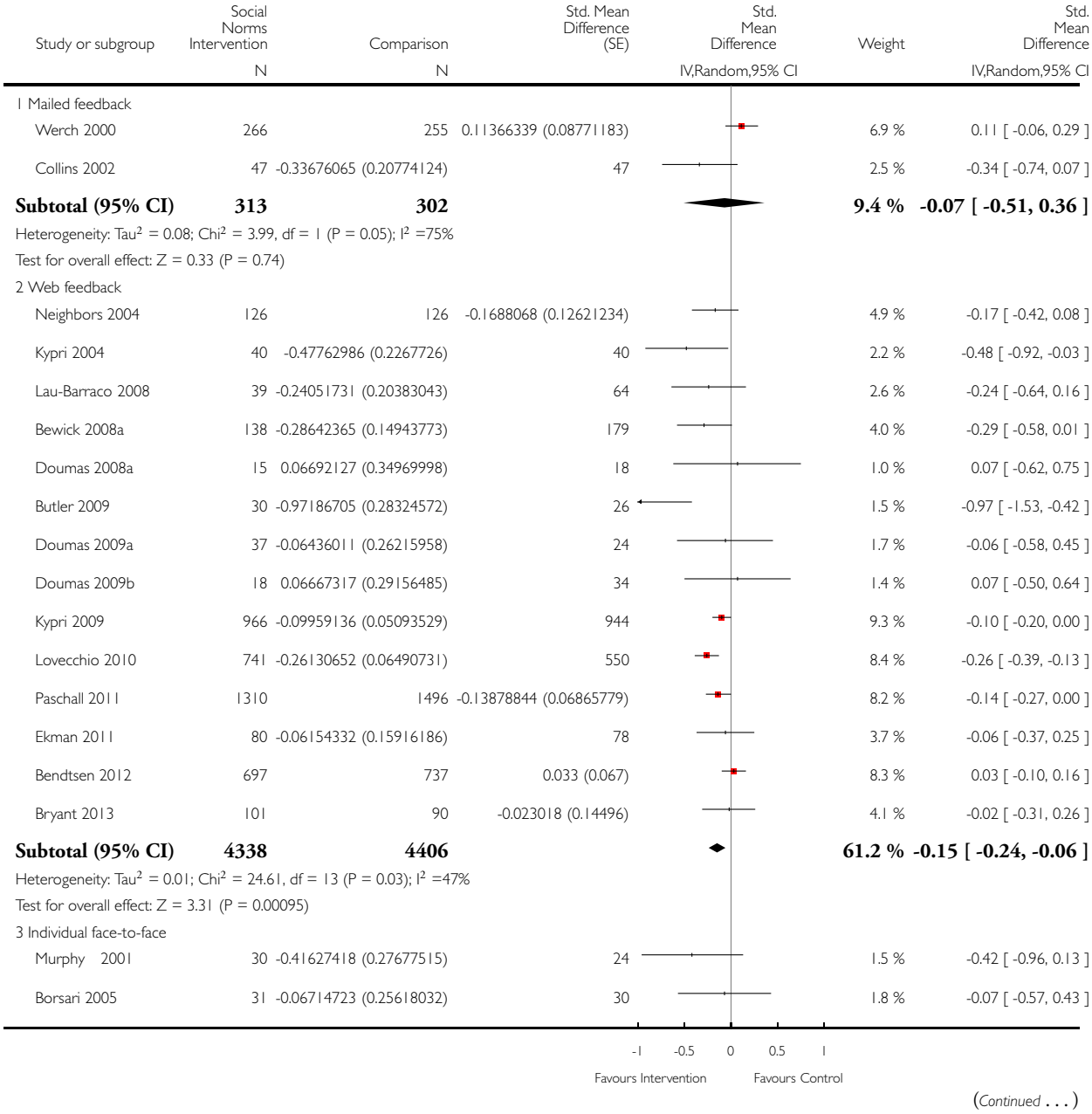


Analysis 1.3. Comparison 1 Social norms (SN) vs control, Outcome 3 Binge drinking: up to 3 months.

Review: Social norms information for alcohol misuse in university and college students

Comparison: 1 Social norms (SN) vs control

Outcome: 3 Binge drinking: up to 3 months



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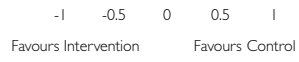
Study or subgroup	Social Norms Intervention N	Comparison N	Std. Mean Difference (SE)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
Carey 2006	84	79	-0.275 (0.15746418)		3.7 %	-0.28 [-0.58, 0.03]
Schaus 2009	128	-0.14668696 (0.12105512)	147		5.1 %	-0.15 [-0.38, 0.09]
Butler 2009	28	-0.7420034 (0.28155583)	26		1.5 %	-0.74 [-1.29, -0.19]
Carey 2011	155	-0.12726585 (0.11117052)	170		5.6 %	-0.13 [-0.35, 0.09]
Subtotal (95% CI)	**456**	**476**			**19.2 %**	**-0.21 [-0.35, -0.07]**
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 5.43$, df = 5 (P = 0.37); $I^2 = 8\%$						
Test for overall effect: Z = 2.99 (P = 0.0028)						
4 Group face-to-face						
Borsari 2000	29	-0.61849141 (0.26656685)	30		1.6 %	-0.62 [-1.14, -0.10]
McNally 2003	24	-0.37677511 (0.27836786)	29		1.5 %	-0.38 [-0.92, 0.17]
Neal 2004	31	-0.2303883 (0.25695616)	30		1.8 %	-0.23 [-0.73, 0.27]
Michael 2006	47	-0.34536041 (0.21132728)	44		2.4 %	-0.35 [-0.76, 0.07]
Henslee 2009	52	-0.02901567 (0.18947611)	60		2.9 %	-0.03 [-0.40, 0.34]
Subtotal (95% CI)	**183**	**193**			**10.2 %**	**-0.28 [-0.48, -0.07]**
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 3.62$, df = 4 (P = 0.46); $I^2 = 0.0\%$						
Test for overall effect: Z = 2.66 (P = 0.0077)						
Total (95% CI)	**5290**	**5377**			**100.0 %**	**-0.17 [-0.24, -0.09]**
Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 45.65$, df = 26 (P = 0.01); $I^2 = 43\%$						
Test for overall effect: Z = 4.49 (P < 0.00001)						
Test for subgroup differences: $Chi^2 = 1.72$, df = 3 (P = 0.63), $I^2 = 0.0\%$						

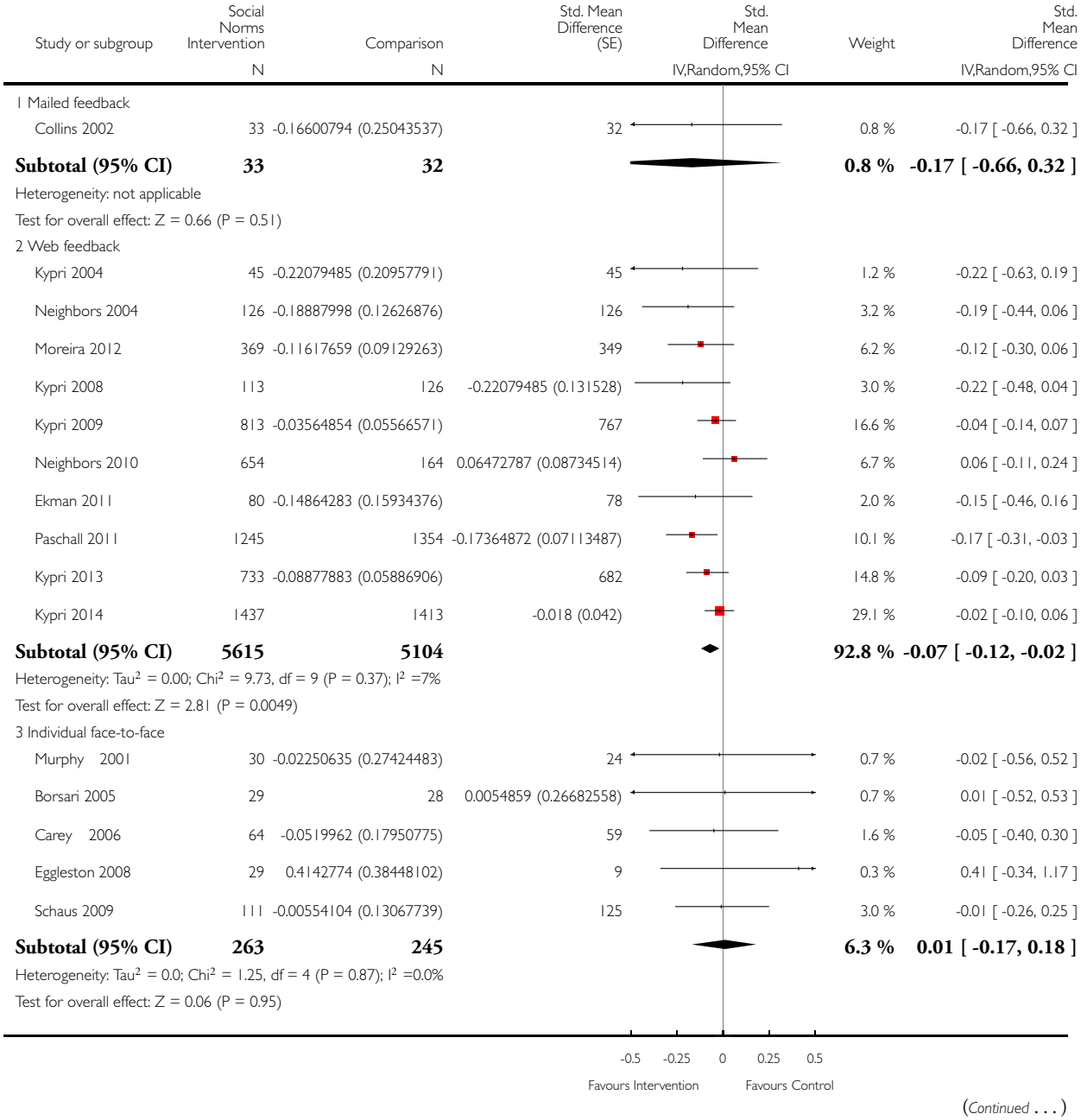


Analysis 1.4. Comparison 1 Social norms (SN) vs control, Outcome 4 Binge drinking: 4+ months.

Review: Social norms information for alcohol misuse in university and college students

Comparison: 1 Social norms (SN) vs control

Outcome: 4 Binge drinking: 4+ months



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Study or subgroup	Social Norms Intervention N	Comparison N	Std. Mean Difference (SE)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
Total (95% CI)	**5911**	**5381**			**100.0 %**	**-0.06 [-0.11, -0.02]**
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 11.76$, df = 15 (P = 0.70); $I^2 = 0.0\%$						
Test for overall effect: Z = 2.82 (P = 0.0048)						
Test for subgroup differences: $Chi^2 = 0.83$, df = 2 (P = 0.66), $I^2 = 0.0\%$						

Analysis 1.5. Comparison 1 Social norms (SN) vs control, Outcome 5 Quantity of drinking: up to 3 months.

Review: Social norms information for alcohol misuse in university and college students

Comparison: 1 Social norms (SN) vs control

Outcome: 5 Quantity of drinking: up to 3 months

Study or subgroup	Social Norms Intervention N	Mean(SD)	Comparison N	Mean(SD)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
1 Mailed feedback							
Werch 2000	266	2.9 (2.9)	255	2.6 (2.5)		4.1 %	0.11 [-0.06, 0.28]
Collins 2002	47	1.09 (0.31)	47	1.21 (0.25)		1.2 %	-0.42 [-0.83, -0.01]
Ju rez 2006	20	0.8 (0.64)	21	0.87 (0.69)		0.6 %	-0.10 [-0.72, 0.51]
Geisner 2007	89	5.35 (7.97)	88	5.28 (8.6)		2.1 %	0.01 [-0.29, 0.30]
Lewis 2008	90	6.51 (5.22)	97	6.97 (5.22)		2.2 %	-0.09 [-0.37, 0.20]
Subtotal (95% CI)	**512**		**508**			**10.2 %**	**-0.04 [-0.21, 0.13]**
Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 6.16$, df = 4 (P = 0.19); $I^2 = 35\%$							
Test for overall effect: Z = 0.47 (P = 0.64)							
2 Web feedback							
Neighbors 2004	126	8.28 (6.94)	126	9.37 (8.48)		2.7 %	-0.14 [-0.39, 0.11]
Kypri 2004	42	8.29 (3.75)	42	10.36 (5.1)		1.1 %	-0.46 [-0.89, -0.02]
Neighbors 2006	58	10.7 (9.14)	61	11.56 (10.68)		1.5 %	-0.09 [-0.45, 0.27]

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Study or subgroup	Social Norms Intervention N	Mean(SD)	Comparison N	Mean(SD)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
Lewis 2007b	76	14.78 (6.71)	84	18.35 (6.69)		1.9 %	-0.53 [-0.85, -0.21]
Walters 2007	37	3.33 (5.52)	39	5.83 (7.58)		1.0 %	-0.37 [-0.83, 0.08]
Lewis 2007a	60	2.58 (1.2)	57	2.91 (12)		1.5 %	-0.04 [-0.40, 0.32]
Lau-Barraco 2008	39	8.6 (8.96)	64	9.84 (9.02)		1.3 %	-0.14 [-0.54, 0.26]
Doumas 2008a	15	2.53 (3.27)	18	3.17 (5.73)		0.5 %	-0.13 [-0.82, 0.56]
Bewick 2008a	138	12.02 (13.58)	179	14.85 (18.67)		3.1 %	-0.17 [-0.39, 0.05]
Doumas 2009a	37	4.89 (3.88)	24	5.77 (5.91)		0.8 %	-0.18 [-0.70, 0.33]
Neighbors 2009	144	6.4 (6.13)	139	7 (5.57)		2.9 %	-0.10 [-0.34, 0.13]
Walters 2009a	58	13.48 (14.67)	63	11.97 (11.8)		1.6 %	0.11 [-0.24, 0.47]
Kypri 2009	962	12.9 (17.8)	942	15.5 (17.5)		6.3 %	-0.15 [-0.24, -0.06]
Butler 2009	30	12.15 (4.7652)	26	17.23 (4.7421)		0.7 %	-1.05 [-1.62, -0.49]
Doumas 2009b	18	6.83 (12.04)	34	10.03 (17.04)		0.7 %	-0.20 [-0.78, 0.37]
Bewick 2010	758	14.92 (18.95)	354	13.6 (19.8)		5.2 %	0.07 [-0.06, 0.19]
Lovecchio 2010	741	16.04 (24.68)	550	19.63 (15.7)		5.7 %	-0.17 [-0.28, -0.06]
Terlecki 2010 Voluntary	22	14.05 (8.86)	19	16.53 (11.93)		0.6 %	-0.23 [-0.85, 0.38]
Terlecki 2010 Mandated	19	21.74 (14.44)	24	23.96 (13.01)		0.6 %	-0.16 [-0.76, 0.44]
Ekman 2011	80	108 (66.2)	78	113.7 (87)		1.9 %	-0.07 [-0.39, 0.24]
Pederson 2012	69	9.81 (10.327)	75	9.71 (7.608)		1.8 %	0.01 [-0.32, 0.34]
Paschall 2011	1310	2.26 (2.74)	1496	2.41 (3.16)		6.7 %	-0.05 [-0.12, 0.02]
LaBrie 2013	147	9 (8)	148	9.6 (9.6)		3.0 %	-0.07 [-0.30, 0.16]
Bryant 2013	101	6.67 (9.86)	90	7.15 (8.83)		2.2 %	-0.05 [-0.34, 0.23]
Ridout 2014	47	19.7887 (22.6706)	48	33.04 (34.33965)		1.3 %	-0.45 [-0.86, -0.04]
Lewis 2014	119	8.12 (7.95)	121	10.51 (9.5)		2.6 %	-0.27 [-0.53, -0.02]
Collins 2014	242	33.16 (32.42)	231	35 (34.87)		3.9 %	-0.05 [-0.23, 0.13]
Patrick 2014	132	17.95 (26.11)	130	17.96 (24.78)		2.7 %	0.00 [-0.24, 0.24]
Subtotal (95% CI)	**5627**		**5262**			**65.7 %**	**-0.12 [-0.18, -0.07]**
Heterogeneity: Tau^2 = 0.01; Chi^2 = 41.81, df = 27 (P = 0.03); I^2 =35%							
Test for overall effect: Z = 4.21 (P = 0.000026)							
3 Individual face-to-face							
Murphy 2001	30	17.58 (7.81)	24	19.49 (9.84)		0.8 %	-0.21 [-0.75, 0.32]
Borsari 2005	31	18.1 (11.96)	30	17.72 (10.49)		0.9 %	0.03 [-0.47, 0.54]
Carey 2006	84	13.7 (9.5)	79	16.4 (9.1)		2.0 %	-0.29 [-0.60, 0.02]

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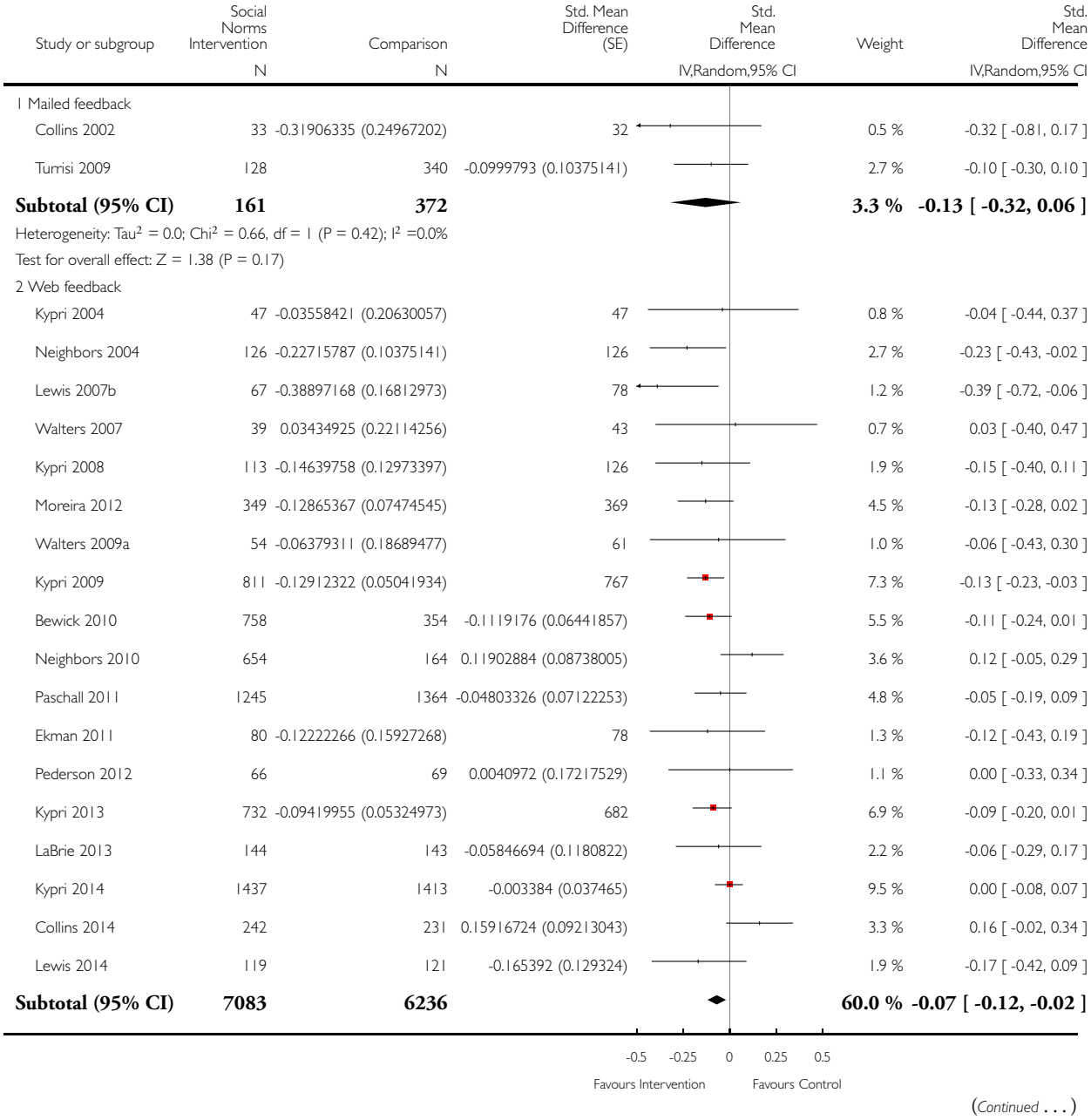
Study or subgroup	Social Norms Intervention N	Mean(SD)	Comparison N	Mean(SD)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
Butler 2009	28	13.63 (4.7624)	26	17.23 (4.7421)		0.7 %	-0.75 [-1.30, -0.19]
Walters 2009a	70	11.69 (12.7)	63	11.97 (11.8)		1.7 %	-0.02 [-0.36, 0.32]
Schaus 2009	128	7.33 (7.09)	147	9.47 (8.67)		2.8 %	-0.27 [-0.51, -0.03]
Carey 2011	155	10.7 (9.89)	170	11.81 (9.46)		3.1 %	-0.11 [-0.33, 0.10]
Martens 2013	116	10.14 (8.9)	128	14.49 (10.52)		2.6 %	-0.44 [-0.70, -0.19]
Subtotal (95% CI)	**642**		**667**			**14.5 %**	**-0.24 [-0.38, -0.11]**
Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 9.80$, df = 7 (P = 0.20); $I^2 = 29\%$							
Test for overall effect: Z = 3.52 (P = 0.00043)							
4 Group face-to-face							
Borsari 2000	29	11.4 (7.03)	30	15.78 (8.17)		0.8 %	-0.57 [-1.09, -0.05]
McNally 2003	24	6.76 (7.54)	29	8.15 (5.79)		0.8 %	-0.21 [-0.75, 0.34]
Neal 2004	31	4.3 (3.4)	30	5 (3.5)		0.9 %	-0.20 [-0.70, 0.30]
Henslee 2009	52	11.95 (8.34)	60	14.1 (13.16)		1.5 %	-0.19 [-0.56, 0.18]
LaChance 2009	68	5.29 (1.84)	58	6.12 (2.75)		1.6 %	-0.36 [-0.71, 0.00]
Subtotal (95% CI)	**204**		**207**			**5.5 %**	**-0.30 [-0.49, -0.10]**
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 1.70$, df = 4 (P = 0.79); $I^2 = 0.0\%$							
Test for overall effect: Z = 2.99 (P = 0.0028)							
5 Marketing campaign							
Moore 2013	262	28 (21.02)	293	29.1 (20.96)		4.2 %	-0.05 [-0.22, 0.11]
Subtotal (95% CI)	**262**		**293**			**4.2 %**	**-0.05 [-0.22, 0.11]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.62 (P = 0.54)							
Total (95% CI)	**7247**		**6937**			**100.0 %**	**-0.14 [-0.19, -0.09]**
Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 72.17$, df = 46 (P = 0.01); $I^2 = 36\%$							
Test for overall effect: Z = 5.55 (P < 0.00001)							
Test for subgroup differences: $Chi^2 = 7.40$, df = 4 (P = 0.12), $I^2 = 46\%$							

Analysis 1.6. Comparison 1 Social norms (SN) vs control, Outcome 6 Quantity of drinking: 4+ months.

Review: Social norms information for alcohol misuse in university and college students

Comparison: 1 Social norms (SN) vs control

Outcome: 6 Quantity of drinking: 4+ months



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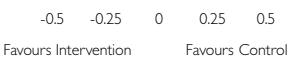
Study or subgroup	Social Norms Intervention N	Comparison N	Std. Mean Difference (SE)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
Heterogeneity: Tau² = 0.00; Chi² = 23.95, df = 17 (P = 0.12); I² =29%						
Test for overall effect: Z = 2.72 (P = 0.0065)						
3 Individual face-to-face						
Marlatt 1998	143	-0.13805739 (0.11591003)	156		2.3 %	-0.14 [-0.37, 0.09]
Larimer 2001	77	-0.17785168 (0.1590019)	82		1.3 %	-0.18 [-0.49, 0.13]
Baer 2001	145	143	-0.1 (0.09)		3.4 %	-0.10 [-0.28, 0.08]
Murphy 2001	30	0.10529048 (0.27404863)	24		0.5 %	0.11 [-0.43, 0.64]
Borsari 2005	29	-0.19339016 (0.26556565)	28		0.5 %	-0.19 [-0.71, 0.33]
Carey 2006	64	-0.21585532 (0.18100706)	59		1.0 %	-0.22 [-0.57, 0.14]
Sim o 2008	142	121	0 (0.12372031)		2.0 %	0.0 [-0.24, 0.24]
Eggleston 2008	29	-0.14851283 (0.38194775)	9		0.2 %	-0.15 [-0.90, 0.60]
Turrisi 2009	149	-0.16911477 (0.09839629)	340		3.0 %	-0.17 [-0.36, 0.02]
Schaus 2009	111	-0.12568345 (0.13054683)	125		1.8 %	-0.13 [-0.38, 0.13]
Walters 2009a	67	-0.23477221 (0.17757849)	61		1.0 %	-0.23 [-0.58, 0.11]
Martens 2013	112	-0.42155988 (0.13081019)	128		1.8 %	-0.42 [-0.68, -0.17]
Subtotal (95% CI)	**1098**	**1276**			**18.8 %**	**-0.15 [-0.23, -0.08]**
Heterogeneity: Tau² = 0.0; Chi² = 7.45, df = 11 (P = 0.76); I² =0.0%						
Test for overall effect: Z = 3.84 (P = 0.00012)						
4 Marketing campaign						
DeJong 2006	1536	1365	-0.07556252 (0.03721057)		9.6 %	-0.08 [-0.15, 0.00]
DeJong 2009	979	1063	0.03996382 (0.04430096)		8.3 %	0.04 [-0.05, 0.13]
Subtotal (95% CI)	**2515**	**2428**			**17.9 %**	**-0.02 [-0.13, 0.09]**
Heterogeneity: Tau² = 0.00; Chi² = 3.99, df = 1 (P = 0.05); I² =75%						
Test for overall effect: Z = 0.35 (P = 0.73)						
Total (95% CI)	**10857**	**10312**			**100.0 %**	**-0.08 [-0.12, -0.04]**
Heterogeneity: Tau² = 0.00; Chi² = 43.15, df = 33 (P = 0.11); I² =24%						
Test for overall effect: Z = 4.17 (P = 0.000030)						
Test for subgroup differences: Chi² = 4.88, df = 3 (P = 0.18), I² =38%						



Analysis 1.7. Comparison 1 Social norms (SN) vs control, Outcome 7 Frequency: up to 3 months.

Review: Social norms information for alcohol misuse in university and college students

Comparison: 1 Social norms (SN) vs control

Outcome: 7 Frequency: up to 3 months

Study or subgroup	Social Norms Intervention N	Mean(SD)	Comparison N	Mean(SD)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
1 Mailed feedback							
Werch 2000	266	2.5 (2.7)	255	2.2 (2.3)		100.0 %	0.12 [-0.05, 0.29]
Subtotal (95% CI)	**266**		**255**			**100.0 %**	**0.12 [-0.05, 0.29]**
Heterogeneity: not applicable							
Test for overall effect: Z = 1.36 (P = 0.17)							
2 Web feedback							
Kypri 2004	42	3.17 (1.77)	41	4.12 (2.53)		2.9 %	-0.43 [-0.87, 0.00]
Lewis 2007b	76	3.42 (1.31)	84	3.88 (1.28)		5.2 %	-0.35 [-0.67, -0.04]
Butler 2009	28	7.61 (2.9577)	26	9.89 (2.9574)		1.8 %	-0.76 [-1.31, -0.21]
Kypri 2009	962	7.6 (5.8)	942	8.6 (5.9)		23.7 %	-0.17 [-0.26, -0.08]
Terlecki 2010 Mandated	19	3.26 (1.52)	24	3.42 (1.64)		1.6 %	-0.10 [-0.70, 0.50]
Terlecki 2010 Voluntary	22	3.09 (1.6)	19	3.58 (1.86)		1.5 %	-0.28 [-0.90, 0.34]
Paschall 2011	1310	3.13 (4.45)	1496	3.49 (5.06)		26.4 %	-0.08 [-0.15, 0.00]
LaBrie 2013	147	5.7 (4.3)	148	5.9 (4.4)		8.6 %	-0.05 [-0.27, 0.18]
Bryant 2013	101	4 (5.06)	90	4.47 (4.65)		6.0 %	-0.10 [-0.38, 0.19]
Lewis 2014	119	1.42 (1.12)	121	1.83 (1.33)		7.2 %	-0.33 [-0.59, -0.08]
Ridout 2014	47	4.4895 (3.924)	48	6.42 (6.57849)		3.3 %	-0.35 [-0.76, 0.05]
Collins 2014	242	7.99 (5.54)	231	8.75 (5.97)		12.0 %	-0.13 [-0.31, 0.05]
Subtotal (95% CI)	**3115**		**3270**			**100.0 %**	**-0.17 [-0.25, -0.09]**
Heterogeneity: Tau^2 = 0.00; Chi^2 = 15.92, df = 11 (P = 0.14); I^2 =31%							
Test for overall effect: Z = 4.37 (P = 0.000012)							
3 Individual face-to-face							
Murphy 2001	30	3.41 (1.13)	24	3.76 (0.98)		10.5 %	-0.32 [-0.86, 0.22]
Carey 2006	84	4.4 (2.1)	79	5.3 (2.3)		31.9 %	-0.41 [-0.72, -0.10]
Butler 2009	28	7.39 (2.9103)	26	9.89 (2.9574)		9.9 %	-0.84 [-1.40, -0.28]
Martens 2013	116	2.31 (1.35)	128	2.88 (1.29)		47.6 %	-0.43 [-0.69, -0.18]
Subtotal (95% CI)	**258**		**257**			**100.0 %**	**-0.45 [-0.63, -0.28]**
Heterogeneity: Tau^2 = 0.0; Chi^2 = 2.18, df = 3 (P = 0.54); I^2 =0.0%							

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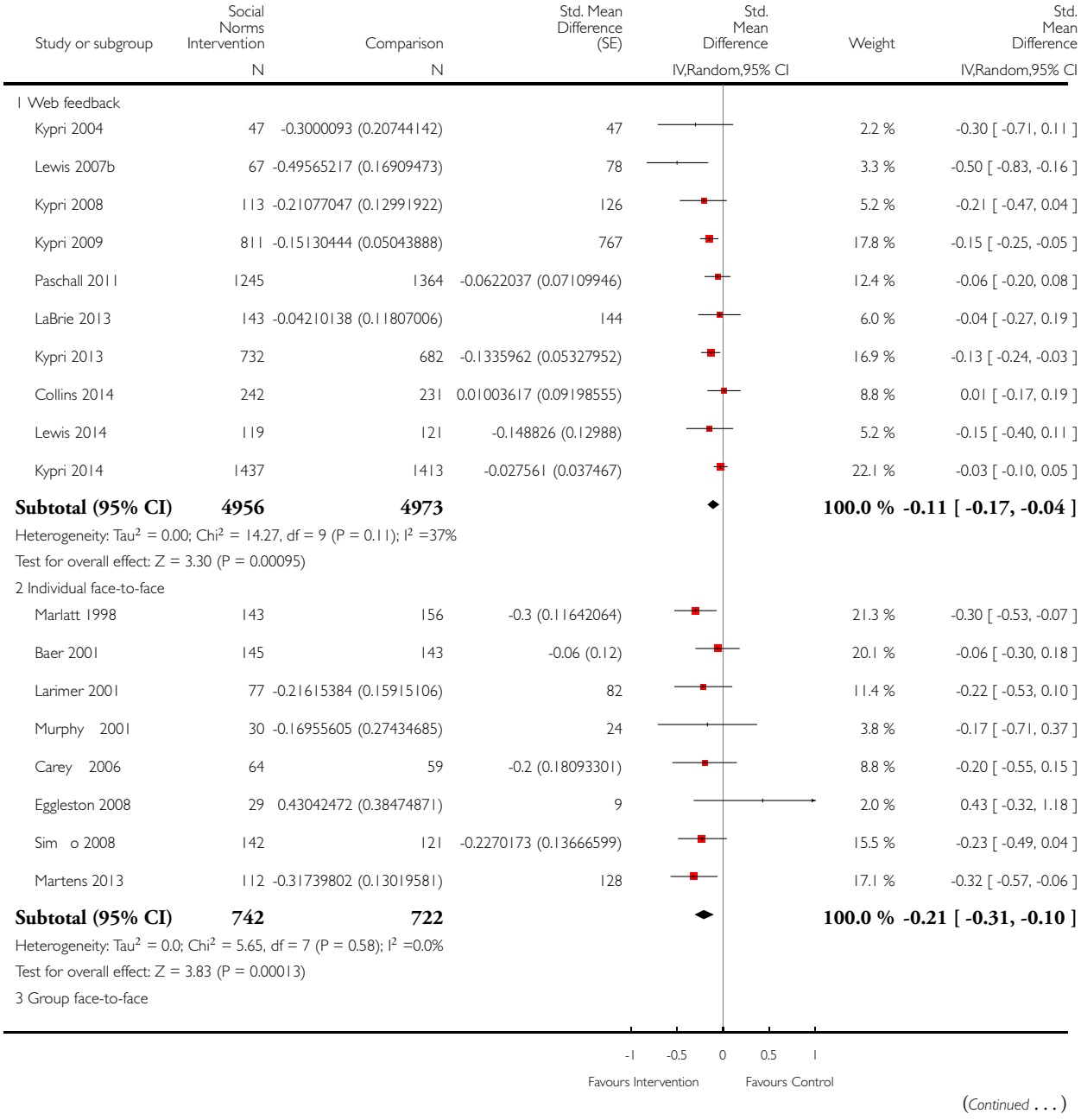
Study or subgroup	Social Norms Intervention N	Mean(SD)	Comparison N	Mean(SD)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
Test for overall effect: Z = 5.05 (P < 0.00001)							
4 Group face-to-face							
Neal 2004	31	2.1 (1.4)	30	2.1 (1.5)		23.2 %	0.0 [-0.50, 0.50]
Michael 2006	47	5.3 (4.7)	44	5.8 (5.5)		34.5 %	-0.10 [-0.51, 0.31]
Henslee 2009	60	6.99 (4.4)	52	6.97 (4.83)		42.3 %	0.00 [-0.37, 0.38]
Subtotal (95% CI)	**138**		**126**			**100.0 %**	**-0.03 [-0.27, 0.21]**
Heterogeneity: Tau^2 = 0.0; Chi^2 = 0.15, df = 2 (P = 0.93); I^2 =0.0%							
Test for overall effect: Z = 0.26 (P = 0.80)							
Test for subgroup differences: Chi^2 = 21.97, df = 3 (P = 0.00), I^2 =86%							

Analysis 1.8. Comparison 1 Social norms (SN) vs control, Outcome 8 Frequency: 4+ months.

Review: Social norms information for alcohol misuse in university and college students

Comparison: 1 Social norms (SN) vs control

Outcome: 8 Frequency: 4+ months



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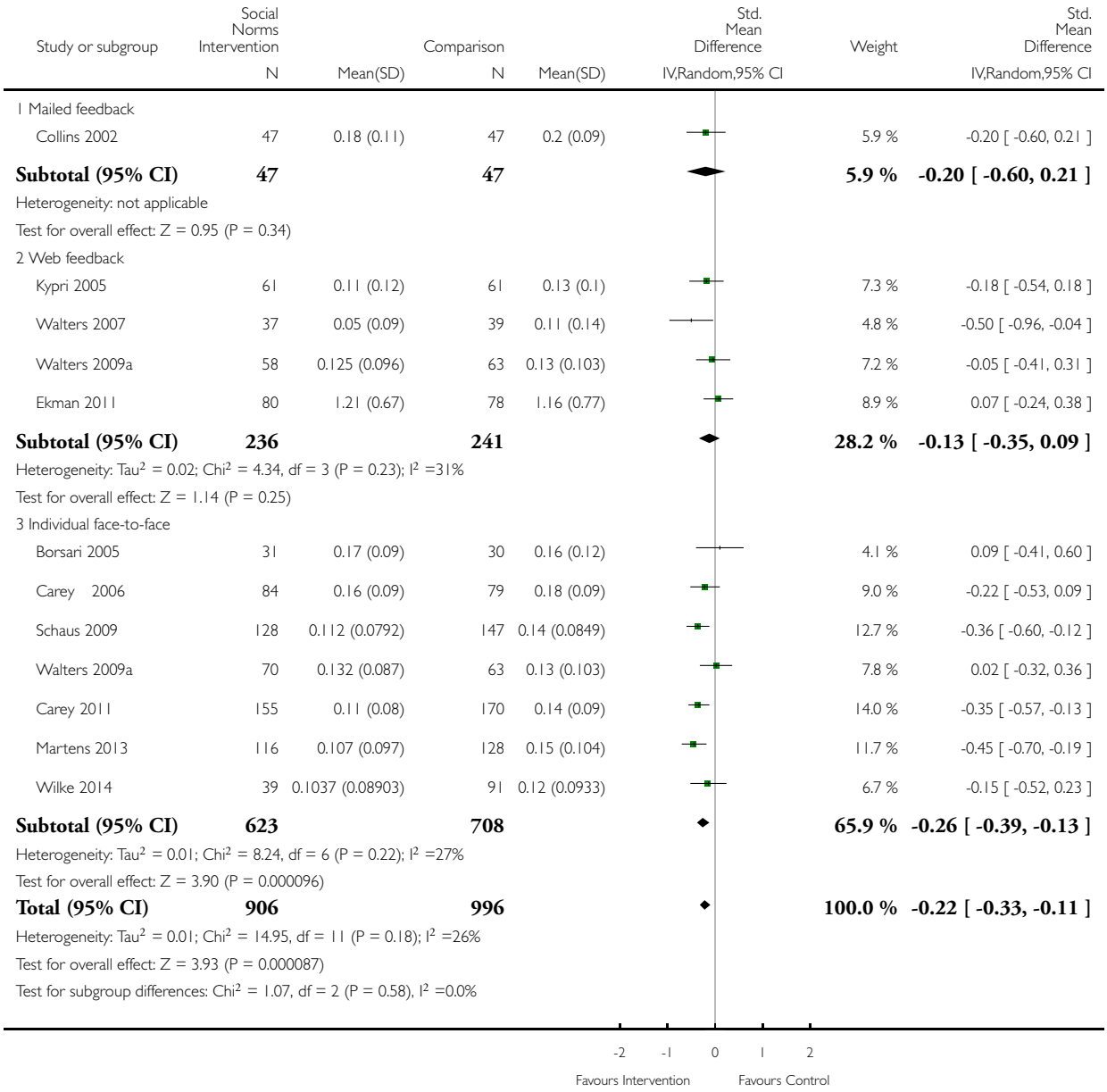
Study or subgroup	Social Norms Intervention N	Comparison N	Std. Mean Difference (SE)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
Borsari 2000	29	-0.75073929 (0.26942985)	30		16.2 %	-0.75 [-1.28, -0.22]
Neal 2004	31	30	0 (0.25610818)		17.1 %	0.0 [-0.50, 0.50]
Michael 2006	47	-0.09799689 (0.20989672)	44		20.8 %	-0.10 [-0.51, 0.31]
LaChance 2009	68	-0.51135233 (0.18161742)	58		23.4 %	-0.51 [-0.87, -0.16]
Henslee 2009	52	0.00431444 (0.18946641)	60		22.6 %	0.00 [-0.37, 0.38]
Subtotal (95% CI)	**227**	**222**			**100.0 %**	**-0.26 [-0.54, 0.02]**
Heterogeneity: Tau^2 = 0.06; Chi^2 = 8.80, df = 4 (P = 0.07); I^2 =55%						
Test for overall effect: Z = 1.81 (P = 0.071)						
4 Marketing campaign						
DeJong 2006	1536	1365	-0.04646978 (0.03720235)		55.4 %	-0.05 [-0.12, 0.03]
DeJong 2009	979	1063	0.02688849 (0.04429855)		44.6 %	0.03 [-0.06, 0.11]
Subtotal (95% CI)	**2515**	**2428**			**100.0 %**	**-0.01 [-0.09, 0.06]**
Heterogeneity: Tau^2 = 0.00; Chi^2 = 1.61, df = 1 (P = 0.20); I^2 =38%						
Test for overall effect: Z = 0.38 (P = 0.71)						
Test for subgroup differences: Chi^2 = 10.64, df = 3 (P = 0.01), I^2 =72%						

Analysis 1.9. Comparison 1 Social norms (SN) vs control, Outcome 9 Peak BAC: up to 3 months.

Review: Social norms information for alcohol misuse in university and college students

Comparison: 1 Social norms (SN) vs control

Outcome: 9 Peak BAC: up to 3 months

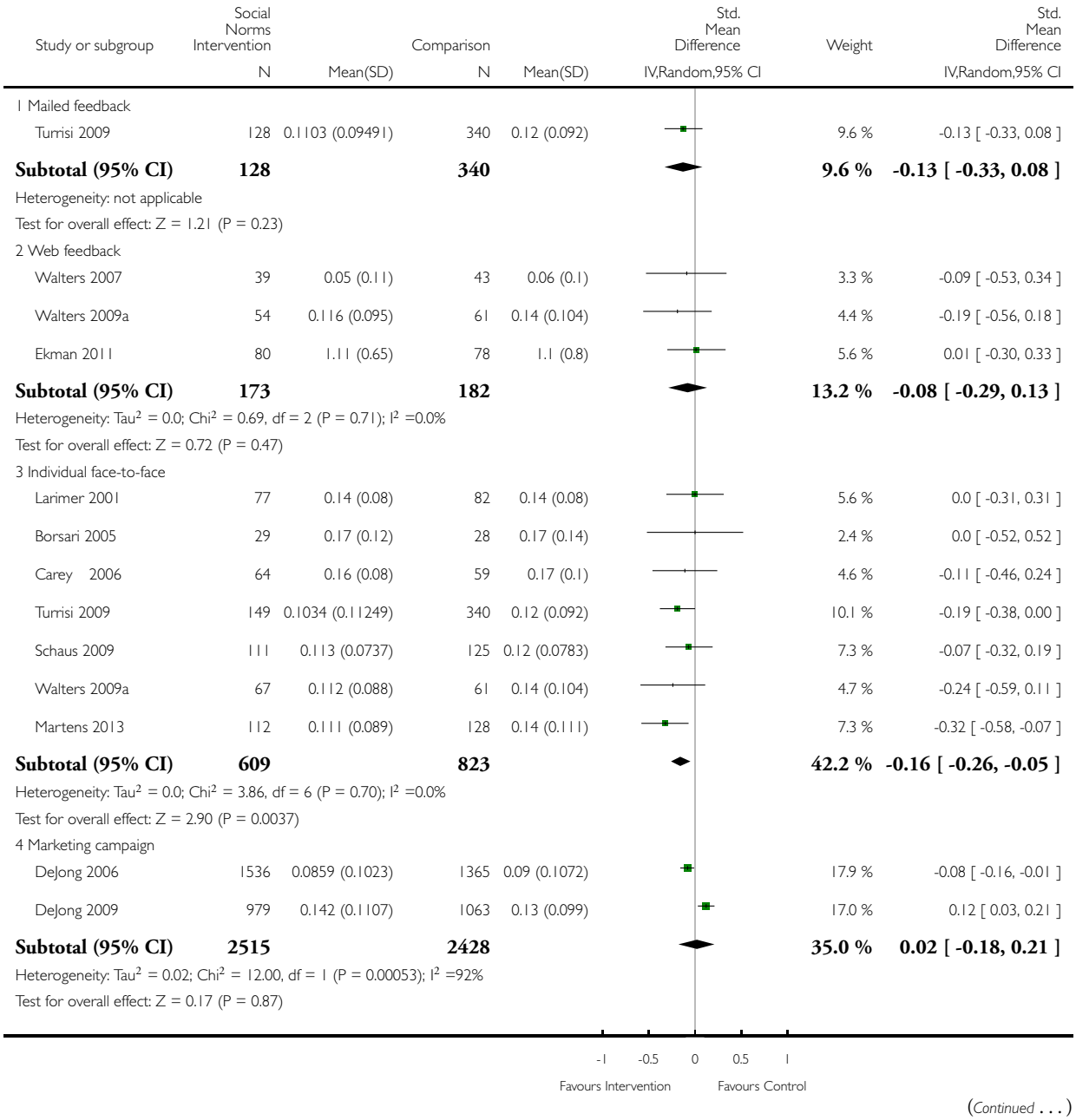


Analysis 1.10. Comparison 1 Social norms (SN) vs control, Outcome 10 Peak BAC: 4+ months.

Review: Social norms information for alcohol misuse in university and college students

Comparison: 1 Social norms (SN) vs control

Outcome: 10 Peak BAC: 4+ months



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Study or subgroup	Social Norms Intervention N	Mean(SD)	Comparison N	Mean(SD)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
Total (95% CI)	**3425**		**3773**			**100.0 %**	**-0.08 [-0.17, 0.00]**
Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 24.09$, df = 12 (P = 0.02); $I^2 = 50\%$							
Test for overall effect: Z = 1.85 (P = 0.065)							
Test for subgroup differences: $Chi^2 = 2.49$, df = 3 (P = 0.48), $I^2 = 0.0\%$							

Analysis 1.11. Comparison 1 Social norms (SN) vs control, Outcome 11 Typical BAC: up to 3 months.

Review: Social norms information for alcohol misuse in university and college students

Comparison: 1 Social norms (SN) vs control

Outcome: 11 Typical BAC: up to 3 months

Study or subgroup	Social Norms Intervention N	Mean(SD)	Comparison N	Mean(SD)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
1 Mailed feedback							
Walters 2000	11	0.23 (0.11)	14	0.27 (0.11)		2.9 %	-0.35 [-1.15, 0.45]
Ju rez 2006	20	0.18 (0.13)	21	0.17 (0.13)		4.7 %	0.08 [-0.54, 0.69]
Lewis 2008	90	0.11 (0.095)	97	0.12 (0.098)		15.3 %	-0.10 [-0.39, 0.18]
Subtotal (95% CI)	**121**		**132**			**22.8 %**	**-0.10 [-0.35, 0.15]**
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 0.70$, df = 2 (P = 0.71); $I^2 = 0.0\%$							
Test for overall effect: Z = 0.78 (P = 0.44)							
2 Web feedback							
Neighbors 2009	144	0.099 (0.112)	138	0.13 (0.13)		19.4 %	-0.25 [-0.48, -0.01]
Subtotal (95% CI)	**144**		**138**			**19.4 %**	**-0.25 [-0.48, -0.01]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.07 (P = 0.039)							
3 Individual face-to-face							
Borsari 2005	31	0.09 (0.05)	30	0.08 (0.07)		6.6 %	0.16 [-0.34, 0.67]

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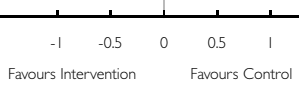
Study or subgroup	Social Norms Intervention N	Mean(SD)	Comparison N	Mean(SD)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
Schaus 2009	128	0.057 (0.0453)	147	0.07 (0.0485)		19.1 %	-0.30 [-0.54, -0.06]
Carey 2011	155	0.06 (0.05)	170	0.08 (0.06)		20.8 %	-0.36 [-0.58, -0.14]
Wilke 2014	44	0.0821 (0.0806)	96	0.07 (0.06833)		11.3 %	0.17 [-0.19, 0.53]
Subtotal (95% CI)	**358**		**443**			**57.7 %**	**-0.14 [-0.40, 0.12]**
Heterogeneity: $Tau^2 = 0.04$; $Chi^2 = 8.70$, df = 3 (P = 0.03); $I^2 = 66\%$							
Test for overall effect: Z = 1.03 (P = 0.30)							
Total (95% CI)	**623**		**713**			**100.0 %**	**-0.17 [-0.31, -0.03]**
Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 10.24$, df = 7 (P = 0.18); $I^2 = 32\%$							
Test for overall effect: Z = 2.40 (P = 0.016)							
Test for subgroup differences: $Chi^2 = 0.80$, df = 2 (P = 0.67), $I^2 = 0.0\%$							



Analysis 1.12. Comparison 1 Social norms (SN) vs control, Outcome 12 Typical BAC: 4+ months.

Review: Social norms information for alcohol misuse in university and college students

Comparison: 1 Social norms (SN) vs control

Outcome: 12 Typical BAC: 4+ months

Study or subgroup	Social Norms Intervention N	Mean(SD)	Comparison N	Mean(SD)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
1 Individual face-to-face							
Larimer 2001	77	0.07 (0.05)	82	0.08 (0.07)		33.2 %	-0.16 [-0.47, 0.15]
Borsari 2005	29	0.07 (0.06)	28	0.07 (0.05)		11.9 %	0.0 [-0.52, 0.52]
Eggleston 2008	29	0.12 (0.07)	9	0.16 (0.13)		5.6 %	-0.45 [-1.21, 0.31]
Schaus 2009	111	0.06 (0.0421)	125	0.06 (0.0447)		49.3 %	0.0 [-0.26, 0.26]
Subtotal (95% CI)	**246**		**244**			**100.0 %**	**-0.08 [-0.26, 0.10]**
Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 1.66$, df = 3 (P = 0.65); $I^2 = 0.0\%$							
Test for overall effect: Z = 0.87 (P = 0.39)							

Analysis 1.13. Comparison 1 Social norms (SN) vs control, Outcome 13 Drinking norms: up to 3 months.

Review: Social norms information for alcohol misuse in university and college students

Comparison: 1 Social norms (SN) vs control

Outcome: 13 Drinking norms: up to 3 months

Study or subgroup	Social Norms Intervention N	Mean(SD)	Comparison N	Mean(SD)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
1 Mailed feedback							
Werch 2000	266	5.4 (2)	255	5.5 (2)		55.9 %	-0.05 [-0.22, 0.12]
Geisner 2007	89	9.1 (6.05)	88	12.4 (9.58)		44.1 %	-0.41 [-0.71, -0.11]
Subtotal (95% CI)	**355**		**343**			**100.0 %**	**-0.21 [-0.56, 0.14]**
Heterogeneity: Tau^2 = 0.05; Chi^2 = 4.23, df = 1 (P = 0.04); I^2 =76%							
Test for overall effect: Z = 1.17 (P = 0.24)							
2 Web feedback							
Neighbors 2004	126	8.7 (4.9)	126	11.85 (6.33)		16.3 %	-0.55 [-0.81, -0.30]
Neighbors 2006	58	11.11 (7.36)	61	16.33 (9.86)		12.6 %	-0.59 [-0.96, -0.23]
Walters 2007	37	7.8 (0.71)	39	26.1 (26.9)		9.8 %	-0.94 [-1.41, -0.46]
Lewis 2007a	60	1.39 (1.01)	57	2.21 (1.04)		12.3 %	-0.79 [-1.17, -0.42]
Doumas 2008a	15	9.46 (7)	18	9.52 (8.69)		6.1 %	-0.01 [-0.69, 0.68]
Doumas 2009a	46	12.63 (5.92)	31	11.31 (5.3)		10.2 %	0.23 [-0.23, 0.69]
Neighbors 2009	144	7.62 (2.82)	138	9.81 (4.54)		16.7 %	-0.58 [-0.82, -0.34]
Lewis 2014	119	10.65 (6.56)	121	14.42 (8.75)		16.1 %	-0.49 [-0.74, -0.23]
Subtotal (95% CI)	**605**		**591**			**100.0 %**	**-0.51 [-0.71, -0.31]**
Heterogeneity: Tau^2 = 0.05; Chi^2 = 18.05, df = 7 (P = 0.01); I^2 =61%							
Test for overall effect: Z = 5.00 (P < 0.00001)							
3 Group face-to-face							
Borsari 2000	29	16.74 (9.77)	30	24.12 (11.05)		27.3 %	-0.70 [-1.22, -0.17]
Henslee 2009	52	2.4 (0.98)	60	3 (0.95)		35.4 %	-0.62 [-1.00, -0.24]
LaChance 2009	68	6.5 (1.81)	58	6.65 (1.6)		37.3 %	-0.09 [-0.44, 0.26]
Subtotal (95% CI)	**149**		**148**			**100.0 %**	**-0.44 [-0.84, -0.04]**
Heterogeneity: Tau^2 = 0.08; Chi^2 = 5.55, df = 2 (P = 0.06); I^2 =64%							

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Study or subgroup	Social Norms Intervention N	Mean(SD)	Comparison N	Mean(SD)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
Test for overall effect: Z = 2.18 (P = 0.029)							
4 Individual face-to-face							
Martens 2013	116	-2.85 (2.74)	128	1.34 (3.19)		100.0 %	-1.40 [-1.68, -1.12]
Subtotal (95% CI)	**116**		**128**			**100.0 %**	**-1.40 [-1.68, -1.12]**
Heterogeneity: not applicable							
Test for overall effect: Z = 9.77 (P < 0.00001)							
Test for subgroup differences: Chi^2 = 36.44, df = 3 (P = 0.00), I^2 =92%							

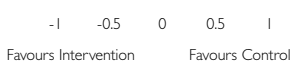
Analysis 1.14. Comparison 1 Social norms (SN) vs control, Outcome 14 Drinking norms: 4+ months.

Review: Social norms information for alcohol misuse in university and college students

Comparison: 1 Social norms (SN) vs control

Outcome: 14 Drinking norms: 4+ months

Study or subgroup	Social Norms Intervention N	Comparison N	Std. Mean Difference (SE)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
1 Web feedback						
Neighbors 2004	126	126	-0.5848906 (0.12865372)		17.3 %	-0.58 [-0.84, -0.33]
Walters 2007	39	43	-0.36489969 (0.22295457)		12.1 %	-0.36 [-0.80, 0.07]
Lewis 2007a	60	57	-0.80021984 (0.19221621)		13.7 %	-0.80 [-1.18, -0.42]
Moreira 2012	349	369	-0.03100011 (0.07467279)		20.2 %	-0.03 [-0.18, 0.12]
Neighbors 2010	654	164	-0.10251803 (0.08736725)		19.6 %	-0.10 [-0.27, 0.07]
Lewis 2014	119	121	-0.338107 (0.130023)		17.2 %	-0.34 [-0.59, -0.08]
Subtotal (95% CI)	**1347**	**880**			**100.0 %**	**-0.34 [-0.57, -0.11]**
Heterogeneity: Tau^2 = 0.06; Chi^2 = 26.61, df = 5 (P = 0.00007); I^2 =81%						
Test for overall effect: Z = 2.94 (P = 0.0033)						



(*Continued* . . .)

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Study or subgroup	Social Norms Intervention N	Comparison N	Std. Mean Difference (SE)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
2 Individual face-to-face						
Martens 2013	112	128	-1.19279885 (0.14037512)		100.0 %	-1.19 [-1.47, -0.92]
Subtotal (95% CI)	**112**	**128**			**100.0 %**	**-1.19 [-1.47, -0.92]**
Heterogeneity: not applicable						
Test for overall effect: Z = 8.50 (P < 0.00001)						
3 Marketing campaign						
DeJong 2006	1536	1365	-0.146 (0.037)		51.0 %	-0.15 [-0.22, -0.07]
DeJong 2009	979	1063	0.02608643 (0.04429843)		49.0 %	0.03 [-0.06, 0.11]
Subtotal (95% CI)	**2515**	**2428**			**100.0 %**	**-0.06 [-0.23, 0.11]**
Heterogeneity: Tau^2 = 0.01; Chi^2 = 8.89, df = 1 (P = 0.003); I^2 =89%						
Test for overall effect: Z = 0.72 (P = 0.47)						
Test for subgroup differences: Chi^2 = 47.25, df = 2 (P = 0.00), I^2 =96%						

APPENDICES

Appendix 1. Ovid MEDLINE search strategy

Phase 1:
1. RANDOMIZED CONTROLLED TRIAL.pt.
2. CONTROLLED CLINICAL TRIAL.pt.
3. RANDOMIZED CONTROLLED TRIALS.sh.
4. RANDOM ALLOCATION. sh.
5. DOUBLE BLIND METHOD. sh.
6. SINGLE BLIND METHOD. sh.
7. or/1 6
8. ANIMALS. sh. not HUMAN. sh.
9. 7 not 8

Phase 2:
10. CLINICAL TRIAL.pt.
11. exp CLINICAL TRIALS/
12. (clin$ adj25 trial$).ti,ab.
13. ((singl$ or doubl$ or trebl$ or tripl$) adj25 (blind$ or mask$)).ti,ab.
14. PLACEBOS.sh.
15. placebo$.ti,ab.
16. random$.ti,ab.
17. RESEARCH DESIGN. sh.

18. or /10- 17
19. 18 not 8
20. 19 not 9
21. 9 or 20

Alcohol, social norms and student terms:

22. Brief intervention$.mp. [mp=title, subject heading word, abstract, instrumentation]
23. Social norms intervention$.mp. [mp=title, subject heading word, abstract, instrumentation]
24. (Social$ adj1 norms$).ti,ab.
25. (norm$ adj1 feedback$).ti,ab.
26. (person$ adj1 feedback$).ti,ab.
27. (individual$ adj1 feedback$).ti,ab.
28. (computer$ adj1 feedback$).ti,ab.
29. (market$ adj1 campaign$).ti,ab.
30. normative$.ti,ab.
31. or/ 22 - 30
32. Alcohol$.mp. [mp=title, subject heading word, abstract, instrumentation]
33. Alcohol intervention$.mp. [mp=title, subject heading word, abstract, instrumentation]
34. (alcohol$ adj1use$).ti,ab.
35. (alcohol$ adj1 abuse$).ti,ab.
36. (alcohol$ adj1 misuse$).ti,ab.
37. (binge$ adj1 drink$).ti,ab.
38. binge drink$.mp. [mp=title, subject heading word, abstract, instrumentation]
39. alcohol use$.mp. [mp=title, subject heading word, abstract, instrumentation]
40. alcohol abuse$.mp. [mp=title, subject heading word, abstract, instrumentation]
41. alcohol misuse$.mp. [mp=title, subject heading word, abstract, instrumentation]
42. (alcohol$ adj1 problems$).ti,ab.
43. or/ 32-42
44. Student$.mp[mp=title, subject heading word, abstract, instrumentation]
45. (university$ adj1 student$).ti,ab.
46. (college$ adj1 student$).ti,ab.
47. education$.mp[mp=title, subject heading word, abstract, instrumentation]
48. or/ 44-47
44. 21 and 31 and 43 and 48

Appendix 2. Ovid EMBASE, CINAHL, PsycINFO search strategy

1. Brief intervention$.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]
2. Social norms intervention$.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]
3. (Social$ adj1 norm$).ti,ab.
4. (norm$ adj1 feedback$).ti,ab.
5. (person$ adj1 feedback$).ti,ab.
6. (individual$ adj1 feedback$).ti,ab.
7. (computer$ adj1 feedback$).ti,ab.
8. (market$ adj1 campaign$).ti,ab.
9. normative$.ti,ab.
10. or/1-9
11. Alcohol$.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]
12. alcohol intervention$.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]

13. (alcohol$ adj1 use$).ti,ab.
14. (alcohol$ adj1 abuse$).ti,ab.
15. (alcohol$ adj1 misuse$).ti,ab.
16. (binge$ adj1 drink$).ti,ab.
17. binge drink$.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]
18. alcohol use$.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]
19. alcohol abuse$.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]
20. alcohol misuse$.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]
21. (alcohol$ adj1 problem$).ti,ab.
22. or/11-21
23. 10 and 22
24. student$.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]
25. (university$ adj1 student$).ti,ab.
26. (college$ adj1 student$).ti,ab.
27. education$.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]
28. or/24-27
29. 23 and 28

Appendix 3. Cochrane Trials Register search strategy

((social NEAR/5 norm*) OR norms OR normative) and (alcohol OR drink*)

Appendix 4. Criteria for judging risk of bias in randomised controlled trials

Item	Judgement	Description
1. Random sequence generation (selection bias)	Low risk	Investigators describe a random component in the sequence generation process such as random number table; computer random number generator; coin tossing; shuffling cards or envelopes; throwing dice; drawing of lots; minimisation
	High risk	Investigators describe a non-random component in the sequence generation process such as odd or even date of birth; date (or day) of admission; hospital or clinic record number; alternation; judgement of the clinician; results of a laboratory test or series of tests; availability of the intervention
	Unclear risk	Insufficient information about the sequence generation process to permit judgement of low or high risk
2. Allocation concealment (selection bias)	Low risk	Investigators enrolling participants could not foresee assignment because 1 of the following, or an equivalent method, was used to conceal allocation: central allocation (including telephone, web-based and phar-

(*Continued*)

		macy-controlled randomisation); sequentially numbered drug containers of identical appearance; sequentially numbered, opaque, sealed envelopes
	High risk	Investigators enrolling participants could possibly foresee assignments because 1 of the following methods was used: open random allocation schedule (e.g. a list of random numbers); assignment envelopes without appropriate safeguards (e.g. envelopes were unsealed or nonopaque or were not sequentially numbered); alternation or rotation; date of birth; case record number; any other explicitly unconcealed procedure
	Unclear risk	Insufficient information to permit judgement of low or high risk. This is usually the case if the method of concealment is not described or is not described in sufficient detail to allow a definitive judgement
3. Blinding of participants and providers (performance bias)	Low risk	No blinding or incomplete blinding, but the review authors judge that the outcome is not likely to be influenced by lack of blinding; blinding of participants and key study personnel was ensured, and it was unlikely that the blinding could have been broken
	High risk	No blinding or incomplete blinding, and the outcome is likely to be influenced by lack of blinding; blinding of key study participants and personnel was attempted, but it is likely that the blinding could have been broken, and the outcome is likely to be influenced by lack of blinding
	Unclear risk	Information was insufficient to permit judgement of low or high risk
4. Blinding of outcome assessors (detection bias)	Low risk	No blinding of outcome assessment, but the review authors judge that the outcome measurement is not likely to be influenced by lack of blinding; blinding of outcome assessment was ensured, and it is unlikely that the blinding could have been broken
	High risk	No blinding of outcome assessment, and outcome measurement is likely to be influenced by lack of blinding; blinding of outcome assessment, but it is likely that the blinding could have been broken, and the outcome measurement is likely to be influenced by lack of blinding
	Unclear risk	Information was insufficient to permit judgement of low or high risk
5. Incomplete outcome data (attrition bias) for all outcomes except retention in treatment or dropout	Low risk	No missing outcome data Reasons for missing outcome data unlikely to be related to true outcome (for survival data, censoring unlikely to be introducing bias) Missing outcome data balanced in numbers across intervention groups, with similar reasons for missing data across groups For dichotomous outcome data, the proportion of missing outcomes compared with observed event risk was not enough to have a clinically relevant impact on the intervention effect estimate

(*Continued*)

		For continuous outcome data, the plausible effect size (difference in means or standardised difference in means) among missing outcomes was not enough to have a clinically relevant impact on observed effect size Missing data have been imputed using appropriate methods All randomly assigned participants were reported/analysed in the group to which they were allocated by randomisation irrespective of non-compliance and co-interventions (intention-to-treat)
	High risk	Reason for missing outcome data likely to be related to true outcome, with imbalance in numbers or reasons for missing data across intervention groups For dichotomous outcome data, the proportion of missing outcomes compared with observed event risk was enough to induce clinically relevant bias in intervention effect estimate For continuous outcome data, plausible effect size (difference in means or standardised difference in means) among missing outcomes was enough to induce clinically relevant bias in observed effect size 'As-treated' analysis was done with substantial departure of the intervention received from that assigned at randomisation
	Unclear risk	Information was insufficient to permit judgement of low or high risk (e.g. number randomly assigned not stated, no reasons for missing data provided; number of dropouts not reported for each group)
6. Selective reporting (reporting bias)	Low risk	The study protocol is available, and all of the study's prespecified (primary and secondary) outcomes that are of interest for this review have been reported in the prespecified way The study protocol is not available, but it is clear that published reports include all expected outcomes, including those that were prespecified (convincing text of this nature may be uncommon)
	High risk	Not all of the study's prespecified primary outcomes have been reported One or more primary outcomes are reported using measurements, analysis methods or subsets of data (e.g. subscales) that were not prespecified One or more reported primary outcomes were not prespecified (unless clear justification for their reporting is provided, such as an unexpected adverse effect) One or more outcomes of interest in the review are reported incompletely so that they cannot be entered into a meta-analysis The study report fails to include results for a key outcome that would be expected to have been reported for such a study
	Unclear risk	Information was insufficient to permit judgement of low or high risk

WHAT'S NEW

Last assessed as up-to-date: 1 July 2015.

Date	Event	Description
3 December 2015	New citation required but conclusions have not changed	Susbstantive conclusions unchanged
10 July 2015	New search has been performed	Search updated to July 2015 and 4 new studies included in the review and meta-analyses

HISTORY

Protocol first published: Issue 4, 2007

Review first published: Issue 3, 2009

Date	Event	Description
11 December 2014	New citation required and conclusions have changed	Results and conclusions changed for some intervention delivery types and follow-up periods; substantial revision including revised risk of bias assessment and inclusion of assessment of publication bias
2 August 2014	New search has been performed	44 new studies added to the 22 studies included in the original review
5 November 2009	Amended	Minimal errors corrected
21 August 2008	New search has been performed	Converted to new review format
3 May 2007	New search has been performed	Substantive amendments made

CONTRIBUTIONS OF AUTHORS

Moreira and Foxcroft wrote the protocol. In the original review (Moreira 2009), Moreira and Foxcroft conducted the searches. Foxcroft led and co-ordinated the updated review. For the updated review, the searches were undertaken by Foxcroft. Moreira, Foxcroft and Santimano sifted the references and abstracted data. Foxcroft led the statistical analysis and writing of the updated review, with support from Santimano, Moreira and Smith.

DECLARATIONS OF INTEREST

Oxford Brookes University has received funding from the alcohol industry for prevention programme development and training. No conflict of interest has been perceived between the funding provided and this Cochrane review.

David R Foxcroft: none

Maria Teresa Moreira: none

Nerissa ML Almeida Santimano: none

Lesley A Smith: none

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Internal sources

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External sources

- FCT-Fundação Ciência e Tecnologia, Portugal.
- AERC-Alcohol Education and Research Council, UK.
- ERAB-European Research Advisory Board, Belgium.

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

For the original review, we changed the criteria to assess the methodological quality of included studies to conform to the recommended methods outlined in the latest *Cochrane Handbook for Systematic Reviews of Interventions* and to the requirements of RevMan5 (Higgins 2008). For the updated review, we took similar steps (Higgins 2011).

INDEX TERMS

Medical Subject Headings (MeSH)

*Peer Group; *Social Behavior; *Students; *Universities; Alcohol Drinking [*prevention & control; psychology]; Binge Drinking [*prevention & control; psychology]; Ethanol [blood; poisoning]; Feedback, Psychological; Randomized Controlled Trials as Topic; Social Control, Informal [methods]; Social Perception; Time Factors

MeSH check words

Humans