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Motivational interviewing for substance use reduction (Review)

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[Intervention Review]

Motivational interviewing for substance use reduction

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ABSTRACT

Background

Substance use is a global issue, with around 30 to 35 million individuals estimated to have a substance-use disorder. Motivational interviewing (MI) is a client-centred method that aims to strengthen a person's motivation and commitment to a specific goal by exploring their reasons for change and resolving ambivalence, in an atmosphere of acceptance and compassion. This review updates the 2011 version by Smedslund and colleagues.

Objectives

To assess the effectiveness of motivational interviewing for substance use on the extent of substance use, readiness to change, and retention in treatment.

Search methods

We searched 18 electronic databases, six websites, four mailing lists, and the reference lists of included studies and reviews. The last search dates were in February 2021 and November 2022.

Selection criteria

We included randomised controlled trials with individuals using drugs, alcohol, or both. Interventions were MI or motivational enhancement therapy (MET), delivered individually and face to face. Eligible control interventions were no intervention, treatment as usual, assessment and feedback, or other active intervention.

Data collection and analysis

We used standard methodological procedures expected by Cochrane, and assessed the certainty of evidence with GRADE. We conducted meta-analyses for the three outcomes (extent of substance use, readiness to change, retention in treatment) at four time points (post-intervention, short-, medium-, and long-term follow-up).

Main results

We included 93 studies with 22,776 participants. MI was delivered in one to nine sessions. Session durations varied, from as little as 10 minutes to as long as 148 minutes per session, across included studies. Study settings included inpatient and outpatient clinics, universities, army recruitment centres, veterans' health centres, and prisons.

We judged 69 studies to be at high risk of bias in at least one domain and 24 studies to be at low or unclear risk.

Comparing **MI to no intervention** revealed a small to moderate effect of MI in substance use post-intervention (standardised mean difference (SMD) 0.48, 95% confidence interval (CI) 0.07 to 0.89; I^2 = 75%; 6 studies, 471 participants; low-certainty evidence). The effect was weaker at short-term follow-up (SMD 0.20, 95% CI 0.12 to 0.28; 19 studies, 3351 participants; very low-certainty evidence). This comparison revealed a difference in favour of MI at medium-term follow-up (SMD 0.12, 95% CI 0.05 to 0.20; 16 studies, 3137 participants; low-certainty evidence) and no difference at long-term follow-up (SMD 0.12, 95% CI -0.00 to 0.25; 9 studies, 1525 participants; very low-certainty evidence). There was no difference in readiness to change (SMD 0.05, 95% CI -0.11 to 0.22; 5 studies, 1495 participants; very low-certainty evidence). Retention in treatment was slightly higher with MI (SMD 0.26, 95% CI -0.00 to 0.52; 2 studies, 427 participants; very low-certainty evidence).

Comparing **MI to treatment as usual** revealed a very small negative effect in substance use post-intervention (SMD -0.14, 95% CI -0.27 to -0.02; 5 studies, 976 participants; very low-certainty evidence). There was no difference at short-term follow-up (SMD 0.07, 95% CI -0.03 to 0.17; 14 studies, 3066 participants), a very small benefit of MI at medium-term follow-up (SMD 0.12, 95% CI 0.02 to 0.22; 9 studies, 1624 participants), and no difference at long-term follow-up (SMD 0.06, 95% CI -0.05 to 0.17; 8 studies, 1449 participants), all with low-certainty evidence. There was no difference in readiness to change (SMD 0.06, 95% CI -0.27 to 0.39; 2 studies, 150 participants) and retention in treatment (SMD -0.09, 95% CI -0.34 to 0.16; 5 studies, 1295 participants), both with very low-certainty evidence.

Comparing **MI to assessment and feedback** revealed no difference in substance use at short-term follow-up (SMD 0.09, 95% CI -0.05 to 0.23; 7 studies, 854 participants; low-certainty evidence). A small benefit for MI was shown at medium-term (SMD 0.24, 95% CI 0.08 to 0.40; 6 studies, 688 participants) and long-term follow-up (SMD 0.24, 95% CI 0.07 to 0.41; 3 studies, 448 participants), both with moderate-certainty evidence. None of the studies in this comparison measured substance use at the post-intervention time point, readiness to change, and retention in treatment.

Comparing **MI to another active intervention** revealed no difference in substance use at any follow-up time point, all with low-certainty evidence: post-intervention (SMD 0.07, 95% CI -0.15 to 0.29; 3 studies, 338 participants); short-term (SMD 0.05, 95% CI -0.03 to 0.13; 18 studies, 2795 participants); medium-term (SMD 0.08, 95% CI -0.01 to 0.17; 15 studies, 2352 participants); and long-term follow-up (SMD 0.03, 95% CI -0.07 to 0.13; 10 studies, 1908 participants). There was no difference in readiness to change (SMD 0.15, 95% CI -0.00 to 0.30; 5 studies, 988 participants; low-certainty evidence) and retention in treatment (SMD -0.04, 95% CI -0.23 to 0.14; 12 studies, 1945 participants; moderate-certainty evidence).

We downgraded the certainty of evidence due to inconsistency, study limitations, publication bias, and imprecision.

Authors' conclusions

Motivational interviewing may reduce substance use compared with no intervention up to a short follow-up period. MI probably reduces substance use slightly compared with assessment and feedback over medium- and long-term periods. MI may make little to no difference to substance use compared to treatment as usual and another active intervention. It is unclear if MI has an effect on readiness to change and retention in treatment. The studies included in this review were heterogeneous in many respects, including the characteristics of participants, substance(s) used, and interventions. Given the widespread use of MI and the many studies examining MI, it is very important that counsellors adhere to and report quality conditions so that only studies in which the intervention implemented was actually MI are included in evidence syntheses and systematic reviews. Overall, we have moderate to no confidence in the evidence, which forces us to be careful about our conclusions. Consequently, future studies are likely to change the findings and conclusions of this review.

PLAIN LANGUAGE SUMMARY

Does motivational interviewing help people reduce their use of alcohol, drugs, or both?

Key messages

• Motivational interviewing may reduce substance use compared with no intervention for a short time.

• We have moderate to no confidence in the evidence, which forces us to be careful about our conclusions. New research may change our conclusions.

• Future studies comparing motivational interviewing to other treatments should be larger, better designed, and better reported.

What is substance use?

'Substance use' refers to the consumption of drugs or alcohol, which can have various effects on the mind and body. Substance use can have a number of consequences, including addiction, physical and mental health problems, and social and legal issues. Alcohol and drugs are therefore potentially harmful substances. People who use substances can damage their health and become ill as a result. About 30 to 35 million people are ill because they use substances. Substance-use disorders are now recognised as complex conditions related to psychosocial, environmental, and biological factors.

How is substance use (or substance-use disorder) treated?

There are a variety of treatments. Our review focused on motivational interviewing, which is a type of counselling aimed at helping people find the motivation to reduce or stop their substance use. Motivational interviewing involves a conversation between a trained counsellor and a client. The two usually meet 1 to 4 times for about an hour each. In the sessions, the counsellor helps the person explore the reasons that prevent them from giving up substance use. The counsellor helps them find ways to feel more willing, able, and confident to reduce or stop using substances, instead of telling the person why and how to change their behaviour.

What did we want to find out?

We wanted to find out whether motivational interviewing is better than no treatment or other forms of treatment at helping people to reduce or stop substance use. We also wanted to find out if motivational interviewing affects people's willingness to change and whether they stay in treatment.

What did we do?

We looked for studies involving people who used substances such as alcohol or drugs. In the studies, people were divided by chance into a motivational interviewing group and a 'control' group that received either no treatment, regular treatment, assessment and feedback, or another active treatment.

Regular treatment involved sharing screening results, advising people to stop using alcohol/drugs, and providing educational materials. Assessment and feedback involved giving people relevant reading material and the chance to ask questions, but no counselling. Other active treatments varied; providing an educational programme about drugs and alcohol is a typical example.

We compared and summarised the results of the studies, and rated our confidence in the evidence, based on factors such as study methods and sizes.

What did we find?

We found 93 studies that involved 22,776 people with substance use. The largest study involved 1726 people and the smallest involved 25 people. The studies were conducted in countries around the world; most were in the USA (72). In most studies (30), one motivational interviewing session was conducted. There were also studies in which more sessions were conducted, up to 9 sessions. Session durations varied, from as little as 10 minutes to as long as 148 minutes per session.

The results show that motivational interviewing may make little to no difference to substance use compared with regular treatment or another active intervention. However, in the short term, motivational interviewing may reduce substance use compared with no treatment. At medium- and long-term follow-up, motivational interviewing probably reduces substance use slightly compared with assessment and feedback. It is unclear whether motivational interviewing has an effect on willingness to change and staying in treatment.

What are the limitations of the evidence?

We have moderate to no confidence in the evidence because of concerns about how some of the studies were conducted. The results were very inconsistent across the different studies, and 18 of the studies involved fewer than 100 people. The certainty of the research forces us to be careful about our conclusions; new research may change them.

How up to date is this evidence?

The evidence is current to November 2022.

SUMMARY OF FINDINGS

Summary of findings 1. Motivational interviewing compared with no intervention for substance-use reduction

Motivational interviewing compared with no intervention for substance-use reduction

Population: people with substance use (adults, young adults, adolescents)
Settings: universities, colleges, clinics, army recruitment centres, Veterans' Affairs medical centres, student health centres
Intervention: motivational interviewing or motivational enhancement therapy
Comparison: no intervention

Outcomes	Illustrative comparative risks* (95% CI)	No. of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Corresponding risk			
	MI/MET versus no intervention			
Extent of substance use post-intervention	The extent of substance use in the MI groups was on average **0.48 SDs lower** (0.07 to 0.89) than in the 'no intervention' control groups.	471 (6 studies)	⊕⊕⊖⊖ **Low**[a,b]	SMD 0.48, 95% CI 0.07 to 0.89
Extent of substance use at short-term follow-up (1 to 4 months)	The extent of substance use in the MI groups was on average **0.20 SDs lower** (0.12 to 0.28) than in the 'no intervention' control groups.	3351 (19 studies)	⊕⊖⊖⊖ **Very low**[c,d]	SMD 0.20, 95% CI 0.12 to 0.28
Extent of substance use at medium-term follow-up (6 to 9 months)	The extent of substance use in the MI groups was on average **0.12 SDs lower** (0.05 to 0.20) than in the 'no intervention' control groups.	3137 (16 studies)	⊕⊕⊖⊖ **Low**[b,d]	SMD 0.12, 95% CI 0.05 to 0.20
Extent of substance use at long-term follow-up (12 to 15 months)	The extent of substance use in the MI groups was on average **0.12 SDs lower** (-0.00 higher to 0.25 lower) than in the' no intervention' control groups.	1525 (9 studies)	⊕⊖⊖⊖ **Very low**[c,e]	SMD 0.12, 95% CI -0.00 to 0.25
Readiness to change (3- to 12-month follow-up)	The readiness to change in the MI groups was on average **0.05 SDs higher** (-0.11 lower to 0.22 higher) than in the 'no intervention' control groups.	1495 (5 studies)	⊕⊖⊖⊖ **Very low**[c,e]	SMD 0.05, 95% CI -0.11 to 0.22
Retention in treatment (0- to 3-month follow-up)	The retention in the MI groups was on average **0.26 SDs higher** (-0.0 to 0.52) than in the 'no intervention' control groups.	427 (2 studies)	⊕⊖⊖⊖ **Very low**[a,c]	SMD 0.26, 95% CI -0.0 to 0.52

*The basis for the **assumed risk** (i.e. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% CI) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **MI**: motivational interviewing; **MET**: motivational enhancement therapy; **SD**: standard deviation; **SMD**: standardised mean difference

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.

Moderate certainty: we are moderately confident in the effect estimate. The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

Low certainty: our confidence in the effect estimate is limited. The true effect may be substantially different from the estimate of the effect.

Very low certainty: we have very little confidence in the effect estimate. The true effect is likely to be substantially different from the estimate of effect.

[a]Downgraded 1 level due to inconsistency with moderate to substantial heterogeneity between treatment effects of studies
[b]Downgraded 1 level due to serious study limitations, with unclear reporting of randomisation or other risk of bias in most studies, and low risk of attrition bias in studies whose total weight exceeded 50% in the meta-analysis
[c]Downgraded 2 levels due to very serious study limitations, with unclear reporting of randomisation or other risk of bias in most studies and high or unclear risk of attrition bias in studies whose total weight exceeded 50% in the meta-analysis
[d]Downgraded 1 level due to publication bias
[e]Downgraded 1 level due to imprecision: the CI includes no to moderate effects and the total number of participants is lower than the optimal information size

Summary of findings 2. Motivational interviewing compared with treatment as usual for substance-use reduction

Motivational interviewing compared with treatment as usual for substance-use reduction

Population: people with substance use (adults, young adults, adolescents)
Settings: community drug use clinics, emergency departments, detoxification hospitals, primary care clinics, urban trauma centres, outpatient addiction centres
Intervention: motivational interviewing or motivational enhancement therapy
Comparison: treatment as usual

Outcomes	Illustrative comparative risks* (95% CI)	No. of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Corresponding risk			
	MI/MET versus treatment as usual			
Extent of substance use post-intervention	The extent of substance use in the MI groups was on average **0.14 SDs higher** (0.02 to 0.27) than in the control groups with treatment as usual.	976 (5 studies)	⊕⊖⊖⊖ **Very low**[a,b]	SMD (0.14, 95% CI -0.27 to -0.02)
Extent of substance use at short-term follow-up (1 to 4 months)	The extent of substance use in the MI groups was on average **0.07 SDs lower** (0.03 higher to 0.17 lower) than in the control groups with treatment as usual.	3066 (14 studies)	⊕⊕⊖⊖ **Low**[a,c]	SMD (0.07, 95% CI -0.03 to 0.17)
Extent of substance use at medium-term follow-up (6 to 9 months)	The extent of substance use in the MI groups was on average **0.12 SDs lower** (0.02 to 0.22) than in the control groups with treatment as usual.	1624 (9 studies)	⊕⊕⊖⊖ **Low**[b,d]	SMD (0.12, 95% CI 0.02 to 0.22)
Extent of substance use at long-term follow-up (12 months)	The extent of substance use in the MI groups was on average **0.06 SDs lower** (0.05 higher to 0.17 lower) than in the control groups with treatment as usual.	1449 (8 studies)	⊕⊕⊖⊖ **Low**[b,d]	SMD (0.06, 95% CI -0.05 to 0.17)
Readiness to change (0- to 3-month follow-up)	Readiness to change in the MI groups was on average **0.06 SDs higher** (0.27 lower to 0.39 higher) than in the control groups with treatment as usual.	150 (2 studies)	⊕⊖⊖⊖ **Very low**[a,b]	SMD (0.06, 95% CI -0.27 to 0.39)

Retention in treatment (0- to 12-month follow-up)	Retention in treatment in the MI groups was on average **0.09 SDs lower** (0.34 lower to 0.16 higher) than in the control groups with treatment as usual.	1295 (5 studies)	⊕⊖⊖⊖ **Very low**[a,e]	SMD (-0.09, 95% CI -0.34 to 0.16)

*The basis for the **assumed risk** (i.e. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% CI) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: confidence interval; **MI:** motivational interviewing; **MET:** motivational enhancement therapy; **SD:** standard deviation; **SMD:** standardised mean difference

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.

Moderate certainty: we are moderately confident in the effect estimate. The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

Low certainty: our confidence in the effect estimate is limited. The true effect may be substantially different from the estimate of the effect.

Very low certainty: we have very little confidence in the effect estimate. The true effect is likely to be substantially different from the estimate of effect.

[a]Downgraded by 2 levels due to very serious study limitations, with unclear reporting of randomisation or other risk of bias in most studies and high or unclear risk of attrition bias in studies whose total weight exceeded 50% in the meta-analysis
[b]Downgraded by 1 level due to imprecision: the CI includes both a small negative and a small positive effect, the total number of participants is lower than the optimal information size to detect a small effect (SMD = 0.2)
[c]No downgrading due to imprecision; the number of participants exceeds the optimal information size (OIS) and the CI does not include any benefits or harms (SMD = 0.2)
[d]Downgraded by 1 level due to serious study limitations, with unclear reporting of randomisation or other risk of bias in most studies, but low risk of attrition bias in studies whose total weight exceeded 50% in the meta-analysis
[e]Downgraded due to imprecision: the CI includes both a small negative and a small positive effect

Summary of findings 3. Motivational interviewing compared with assessment and feedback for substance-use reduction

Motivational interviewing compared with assessment and feedback for substance-use reduction

Population: people with substance use (adults, young adults, adolescents)
Settings: paediatric emergency departments, prisons, colleges, Veterans Affairs' medical centres
Intervention: motivational interviewing or motivational enhancement therapy
Comparison: assessment and feedback

Outcomes	Illustrative comparative risks* (95% CI)	No. of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Corresponding risk			
	MI/MET versus assessment and feedback			
Extent of substance use post-intervention	None of the included studies measured this outcome.			
Extent of substance use at short-term follow-up (1 to 4 months)	The extent of substance use in the MI groups was on average **0.09 SDs lower** (0.23 lower to 0.05 higher) than in the control groups with assessment and feedback.	854 (7 studies)	⊕⊕⊖⊖ **Low**[a,b]	SMD (0.09, 95% CI -0.05 to 0.23)

Extent of substance use at medium-term follow-up (6 months)	The extent of substance use in the MI groups was on average **0.24 SDs lower** (0.08 to 0.40) than in the control groups with assessment and feedback.	688 (6 studies)	⊕⊕⊕⊖ **Moderate**[a,c]	SMD (0.24, 95% CI 0.08 to 0.40)
Extent of substance use at long-term follow-up (12 to 15 months)	The extent of substance use in the MI groups was on average **0.24 SDslower** (0.07 to 0.41) than in the control groups with assessment and feedback.	448 (3 studies)	⊕⊕⊕⊖ **Moderate**[a]	SMD (0.24, 95% CI 0.07 to 0.41)
Readiness to change	None of the included studies measured this outcome.			
Retention in treatment	None of the included studies measured this outcome.			

*The basis for the **assumed risk** (i.e. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% CI) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: confidence interval; **MI:** motivational interviewing; **MET:** motivational enhancement therapy; **SD:** standard deviation; **SMD:** standardised mean difference

GRADE working group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.

Moderate certainty: we are moderately confident in the effect estimate. The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

Low certainty: our confidence in the effect estimate is limited. The true effect may be substantially different from the estimate of the effect.

Very low certainty: we have very little confidence in the effect estimate. The true effect is likely to be substantially different from the estimate of effect.

[a]Downgraded by 1 level due to serious study limitations, with unclear reporting of randomisation or other risk of bias in most studies, but low risk of attrition bias in studies with whose total weight exceeded 50% in the meta-analysis
[b]Downgraded by 1 level due to imprecision: the total number of participants is lower than the optimal information size to detect a small effect (SMD = 0.2)
[c]Not downgraded for very serious limitations (risk of attrition bias with loss to 6-month follow-up of 21% in Stein 2010)

Summary of findings 4. Motivational interviewing compared with other active intervention for substance-use reduction

Motivational interviewing compared with other active intervention for substance-use reduction

Population: people with substance use (adults, young adults, adolescents)
Settings: HIV primary care clinics, colleges, criminal justice system, inpatient detoxification clinics
Intervention: motivational interviewing or motivational enhancement therapy
Comparison: other active intervention (e.g. Alcohol and Cannabis Education, Health Education, Case Management)

Outcomes	Illustrative comparative risks* (95% CI)	No. of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Corresponding risk			
	MI/MET versus other active intervention			
Extent of substance use post-intervention	The extent of substance use in the MI groups was on average **0.07 SDs lower** (0.29 lower to 0.15	338 (3 studies)	⊕⊕⊖⊖ **Low**[a,b]	SMD (0.07, 95% CI -0.15 to 0.29)

	higher) than in the control groups with another active intervention.			
Extent of substance use at short-term follow-up (1 to 5 months)	The extent of substance use in the MI groups was on average **0.05 SDs lower** (0.13 lower to 0.03 higher) than in the control groups with another active intervention.	2795 (18 studies)	⊕⊕⊖⊖ **Low**[c]	SMD (0.05, 95% CI -0.03 to 0.13)
Extent of substance use at medium-term follow-up (6 to 11 months)	The extent of substance use in the MI groups was on average **0.08 SDs lower** (0.17 lower to 0.01 higher) than in the control groups with another active intervention.	2352 (15 studies)	⊕⊕⊖⊖ **Low**[c,d]	SMD (0.08, 95% CI -0.01 to 0.17)
Extent of substance use at long-term follow-up (12 to 24)	The extent of substance use in the MI groups was on average **0.03 SDs lower** (0.13 lower to 0.07 higher) than in the control groups with another active intervention.	1908 (10 studies)	⊕⊕⊖⊖ **Low**[c,d]	SMD (0.03, 95% CI -0.07 to 0.13)
Readiness to change (0- to 3-month follow-up)	Readiness to change in the MI groups was on average **0.15 SDs higher** (0.00 lower to 0.30 higher) than in the control groups with another active intervention.	988 (5 studies)	⊕⊕⊖⊖ **Low**[a,b]	SMD (0.15, 95% CI -0.00 to 0.30)
Retention in treatment (0- to 12- month follow-up)	Retention in the MI groups was on average **0.04 SDs lower** (0.23 lower to 0.14 higher) than in the control groups with another active intervention.	1945 (12 studies)	⊕⊕⊕⊖ **Moderate**[a]	SMD (-0.04, 95% CI -0.23 to 0.14)

*The basis for the **assumed risk** (i.e. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% CI) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: confidence interval; **MI:** motivational interviewing; **MET:** motivational enhancement therapy; **SD:** standard deviation; **SMD:** standardised mean difference

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.

Moderate certainty: we are moderately confident in the effect estimate. The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.

Low certainty: our confidence in the effect estimate is limited. The true effect may be substantially different from the estimate of the effect.

Very low certainty: we have very little confidence in the effect estimate. The true effect is likely to be substantially different from the estimate of effect.

[a]Downgraded by 1 level due to serious study limitations, with unclear reporting of randomisation or other risk of bias in most studies, but low risk of attrition bias in studies whose total weight exceeded 50% in the meta-analysis
[b]Downgraded by 1 level due to imprecision: the CI includes both negative and positive effects, and the total number of participants is lower than the optimal information size to detect a small effect (SMD = 0.2)
[c]Downgraded by 2 levels due to very serious study limitations, with unclear reporting of randomisation or other risk of bias in most studies and high or unclear risk of attrition bias in studies whose total weight exceeded 50% in the meta-analysis
[d]No downgrading due to imprecision; the number of participants exceeds the optimal information size (OIS) and the CI does not include any benefits or harms (SMD = 0.2)

BACKGROUND

Description of the condition

Substance use is a global issue, with 30 to 35 million individuals estimated to have a substance-use disorder (UNODC 2022). According to the World Health Organization (WHO 2019; WHO 2022), 3 million deaths every year result from harmful alcohol use, which represents 5.3% of all deaths globally. Harmful alcohol use is a causal factor in more than 200 disease and injury conditions. In addition, worldwide, one in 17 people aged 15 to 64 years used an illicit drug in 2021 (UNODC 2023). The estimated number of users increased from 240 million in 2011 to 296 million in 2021, representing 5.8% of the global population aged 15 to 64 years and an increase of 23% (UNODC 2023). In 2019, an estimated 494,000 people died in relation to substance use, and 30.9 million "healthy" life years were lost due to premature death and disability (UNODC 2022). Drug and alcohol use, hereinafter referred to as substance use, imposes a significant health, social, and economic burden on individuals and society as a whole (Schulte 2014). Furthermore, substance use is a major contributor to the global burden of disease. In 2016, alcohol use was responsible for 99.2 million disability-adjusted life years (DALYs), representing 4.2% of total DALYs. Drug use accounted for 31.8 million DALYs, or 1.3% of total DALYs (Degenhardt 2018).

In substance-use research, the previously dominant binary understanding of substance use (user/non-user or addicted/not addicted) has given way to a framework that views substance use on a continuum, with different manifestations, severities, and patterns of substance-use behaviour (Schumacher 2020). This conceptualisation was taken into account when terminology was updated in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) in 2013 (APA 2013). The terms 'substance abuse' and 'substance dependence' are now referred to as 'substance use disorder' (APA 2013). According to the DSM-5, two of 11 symptoms must have been present in the previous 12 months to meet the criteria for a substance-use disorder. These include symptoms related to loss of control over substance use, substance use that overrides other activities and leads to health problems, tolerance, and physiological withdrawal symptoms (Witkiewitz 2022). As not all people meet the diagnostic criteria for a substance-use disorder, but may use substances in a way that puts them at risk of accidents, injuries, chronic illness, or the development of substance-use disorders, the spectrum of (unhealthy) use – such as binge-drinking, low-risk use, hazardous-substance use, and harmful-substance use – should also be considered under substance use (Saitz 2021; Schumacher 2020). Thus, throughout this review update, we have substituted the term 'substance use' for 'substance abuse', the term used in the previous version. In addition, we use the term 'people with substance use', in line with the concept of people-first language, to maintain the integrity of the individual by distinguishing the person from their diagnosis or pattern of substance use.

Substance use is distinct from 'misuse'. Substance misuse is the incorrect use of medication by patients, who may use a drug for a purpose other than that for which it was prescribed, or use of a substance for unintended purposes (APA 2013). The focus of this review is substance use, but not misuse. Substances considered in this review include alcohol, drugs, inhalants, and other substances that can be ingested, inhaled, injected, or otherwise taken into the body and lead to dependence and other harmful effects. We did not include tobacco products as there is another Cochrane review on motivational interviewing for smoking cessation (Lindson 2019).

Description of the intervention

Motivational interviewing was first described by William R. Miller (Miller 1983), and developed by Miller and Stephen Rollnick (Miller 1991). Motivational interviewing is a collaborative, goal-oriented style of communication with a particular focus on the language of change. It aims to strengthen an individual's personal motivation and commitment to a specific goal by exploring the person's reasons for change and resolving ambivalence in an atmosphere of acceptance and compassion (Miller 2012).

Motivational interviewing was originally designed to support the treatment of alcohol addiction and later expanded and applied to other substances (e.g. tobacco, marijuana), risky behaviours (e.g. unprotected sexual intercourse, needle-sharing), and health promotion (e.g. physical exercise, diet, medication adherence). The use of motivational interviewing in relation to substance use has already been explored in a number of systematic reviews, including for cannabis-use disorder (Gates 2016), alcohol consumption in people with concurrent alcohol and illicit drug use (Klimas 2018), smoking cessation (Lindson 2019), and prevention of alcohol misuse (Foxcroft 2016). Motivational interviewing is also used outside the health sector (e.g. education, child welfare, correctional system) to address a wide range of issues (e.g. ineffective teaching practices, school and employment dropout, and offender rehabilitation) (Frost 2018). Motivational interviewing can be used as a stand-alone intervention or as part of an intervention consisting of several components. The most widely used adapted form of motivational interviewing is motivational enhancement therapy (MET). This therapy was developed as part of Project MATCH (Matching Alcoholism Treatments to Client Heterogeneity), an 8-year, multisite clinical trial sponsored by the American National Institute on Alcohol Abuse and Alcoholism (Project MATCH 1997). Motivational enhancement therapy integrates personalised normative feedback to facilitate change.

Motivational interviewing is not protected by copyright or trademark law and has been flexibly adapted to different settings. Thus, it is regarded as a 'fluid' intervention, which has led to mixed results regarding evidence (Björk 2014; Miller 2014). Although Miller and Rollnick embraced this fluidity and indeed encouraged the flexible use of motivational interviewing, they expressed concerns regarding treatment implementation and fidelity. As a result, in 2014, they described three quality conditions – related to intervention content, quality assurance, and intervention fidelity – that should be present in a study. Specifically, they suggested that: (1) the intervention should include the components that are theoretically and empirically related to its effectiveness; (2) therapists should be trained on an appropriate predefined performance criterion prior to treating study participants; and (3) intervention fidelity should be thoroughly documented through reliable coding of therapeutic sessions throughout the study and reported in a manner that allows for direct comparison with competency levels reported in other studies (Miller 2014).

How the intervention might work

Motivational interviewing is intended to work through the interaction of four main processes (referred to as 'principles' in the earlier version), four elements of the 'spirit' of motivational

interviewing, as well as specific core skills for counsellors which are described in more detail below (Miller 2012).

The four main processes of *engaging*, *focusing*, *evoking*, and *planning* are understood as overlapping, sequential, and recursive processes. *Engaging* means establishing a helpful connection and a working relationship. *Focusing* means concentrating on a particular agenda, on what the person wants to talk about, possibly on one or more emerging change goals or on a broader change plan. The third process, *evoking*, is about finding out the client's own motivation for change and getting the person to make these arguments themselves. The last process, *planning*, involves both developing a commitment to change and formulating a concrete action plan that may need to be revised over time.

The processes of motivational interviewing are accompanied by four elements called the 'spirit' of motivational interviewing, which encompass *partnership, acceptance, compassion,* and *evocation*. *Partnership* aims at building active cooperation between experts and means that motivational interviewing is carried out 'for' and 'with' a person. *Acceptance* involves absolute appreciation, accurate empathy, support for autonomy, and affirmation. *Compassion* aims at actively promoting the well-being of the other person and prioritising their needs. Finally, *evocation* is strength-oriented and means understanding the client's perspective and awakening and strengthening already existing motivations for change.

In addition to the above-mentioned processes and the spirit of motivational interviewing, there are five core competencies important for motivational interviewing counsellors to possess. These include *asking open-ended questions*, *affirming* the client's strengths and skills, *reflective listening*, *summarising* the content of the conversation, and *informing and advising* when permitted and appropriate.

In the 40 years since the original description of motivational interviewing (Miller 1983), many randomised controlled trials (RCTs) and systematic reviews have been conducted (e.g. Frost 2018; Hurlocker 2020; Lundahl 2010; Lundahl 2013; Magill 2018). While some of them report positive effects on a range of health behaviours – such as gambling, alcohol and cannabis use, and eating disorders – and suggest that motivational interviewing may be beneficial (Cowlishaw 2012; Foxcroft 2016; Gates 2016; Macdonald 2012; Mbuagbaw 2012; Zomahoun 2017), others are more cautious or inconclusive (Klimas 2018; Lindson 2019). Several authors, including authors of the previous version of this review (Smedslund 2011), have pointed out that it is important to investigate not only whether, but also how, motivational interviewing works. In this regard, efforts have been made to explore the mechanisms of change within motivational interviewing in order to understand the drivers of behaviour change and to optimise the implementation and effectiveness of the intervention (Copeland 2015; Magill 2019). Three main hypotheses explaining how motivational interviewing might work have been advanced: the technical, relational, and conflict resolution hypotheses. The technical hypothesis proposes that motivational-interviewing-consistent therapist skills, such as open-ended questions and affirmations, will be associated with an increase in client statements during the session that indicate motivation and commitment to behaviour change ('change talk'). In turn, motivational-interviewing-inconsistent therapist skills, such as confrontations and unsolicited advice, will be associated with a decrease in client change talk and an increase in client statements that indicate concerns or reasons against behaviour change ('sustain talk') (Magill 2018; Magill 2014). The relational hypothesis proposes that session-level indicators of therapist relational skills, such as empathy or motivational interviewing spirit, will predict client behaviour change at follow-up (Magill 2018). Finally, the conflict resolution hypothesis suggests that behaviour change in motivational interviewing results from the process of exploration and the resolution of ambivalence (Magill 2019).

In recent decades, increasing attention has been paid to the mechanisms of action that should be considered in motivational interviewing implementation, training, and quality assurance (Frey 2021; Magill 2019; Miller 2014). Learning motivational interviewing requires comprehensive didactic training, the application of skills in context-specific practice situations, and the continuous promotion of reflective practice (Frey 2021). It is essential that counsellors and researchers using motivational interviewing understand the mechanisms of change that lead to improved outcomes and fidelity.

Why it is important to do this review

This review is important because it provides a rigorous and up-to-date evidence synthesis and meta-analysis of the effects of motivational interviewing, a widely-used approach which has generated a vast and ever-expanding field of research. At least 18 systematic reviews and meta-analyses of motivational interviewing have been published since 2000 (Andréasson 2003; Burke 2003; Burke 2004; Carey 2007; de Wildt 2002; Dunn 2001; Emmelkamp 2006; Grenard 2006; Hettema 2005; Larimer 2007; Lundahl 2010; Macdonald 2012; Magill 2018; Mbuagbaw 2012; Nahom 2005; Rubak 2005; Vasilaki 2006; Zomahoun 2017). Some of these have studied the effects of motivational interviewing on groups besides those who use substances, or have studied only people who drink alcohol. Other reviews have included randomised trials and other study designs. The main strengths of this review are its exhaustive and systematic search strategy, restriction to randomised controlled trials, assessment of the included studies' risk of bias, and GRADE assessments of evidence for the primary outcomes.

Regular updating of this review is also important, for several reasons. First, patterns of health, disease, and mortality are dynamic and change at both individual and population levels (Cockerham 2021). For substance use in particular, access to and availability of substances, as well as patterns of use, are changing (UNODC 2022). Second, in the very active field of motivational interviewing research, researchers are conducting many new studies that provide important insights into the effectiveness of this intervention. This is important because, as outlined above, motivational interviewing and its quality criteria have evolved from its original development in 1983 to the present day. Third, substance-use diagnostic guidelines and classification systems are regularly updated. Correspondingly, regularly updating this review allows for the inclusion of these developments and ensures that the review is based on the most current evidence. This is particularly important as this may serve as a basis for clinical practice guidelines and decision-making.

OBJECTIVES

To assess the effectiveness of motivational interviewing for substance use on the extent of substance use, readiness to change, and retention in treatment.

METHODS

Criteria for considering studies for this review

Types of studies

We included studies that allocated people or institutions randomly or quasi-randomly to motivational interviewing or motivational enhancement therapy. Included studies had to be published in or after 1983, the year that motivational interviewing was introduced. A quasi-random allocation could be based on, for example, date of birth or case number.

Types of participants

We considered studies eligible if they included participants formally diagnosed with a substance-use disorder according to the *International Classification of Diseases* version 10 (ICD-10) (WHO 1993) or 11 (ICD-11) (WHO 2018). We also included equivalent disorders and codes based on the *Diagnostic and Statistical Manual of Mental Disorders* version three (DSM-III-R) (APA 1987), four (DSM-IV) (APA 1994), or five (APA 2013). Additionally, we included studies in which people were screened positive for risky or hazardous consumption, using screening instruments such as the Alcohol Use Disorders Identification Test (AUDIT) (Saunders 1993; WHO 2001), the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) (WHO 2010), or the Drug Use Disorders Identification Test (DUDIT) (Berman 2005). There were no limitations on age, gender, or other participant characteristics. Substances considered in this review include alcohol, drugs, inhalants, and other substances that can be ingested, inhaled, injected, or otherwise taken into the body and lead to dependence and other harmful effects. We excluded nicotine as there is another Cochrane review on motivational interviewing for smoking cessation (Lindson 2019).

Types of interventions

Experimental intervention

Eligible interventions needed to have been labelled as 'motivational interviewing' or 'motivational enhancement therapy'. Interventions were required to be based on the processes of motivational interviewing (engaging, focusing, evoking, and planning) as described in Miller 1991 and Miller 2012. Our aim was to assess the effectiveness of motivational interviewing or motivational enhancement therapy in isolation. We only included trials with multicomponent interventions if the additional elements of the intervention around motivational interviewing were part of both the experimental and control intervention. Eligible studies had to include interventions delivered individually and face to face. We excluded studies that conducted group interventions and that were not delivered in person (e.g. computer- or telephone-delivered interventions). There were no restrictions on intervention duration. To ensure that the given intervention was indeed motivational interviewing, information had to be provided on the quality criteria proposed by Miller and Rollnick (Miller 2014), such as intervention content, training, quality assurance and fidelity, and process coding. We excluded studies if they did not provide sufficient information on these criteria.

Control intervention

Eligible control interventions included no intervention, treatment as usual, assessment and feedback, or other active intervention. Treatment as usual may have included, for example, informing participants of their screening results, advising them to abstain from drug use, and providing them with psycho-educational material. Assessment and feedback is a condition in which participants are not given advice but rather, for example, written material that they can read themselves and then ask questions about. Another active control intervention might be designed as a standard educational session and follow the timeline of motivational interviewing sessions. However, unlike motivational interviewing, other active interventions could **not** involve therapists:

- reflecting on participants' experiences or asking them for their perspectives;
- asking about participants' perceptions of peer substance use;
- giving age-appropriate feedback about participants' substance use;
- asking participants' about how they could reduce their substance use; or
- discussing harm reduction strategies.

Types of outcome measures

Data on substance use could be both dichotomous (number of participants ceasing substance use) and continuous (e.g. mean number of days with substance use in last 30 days). Substance use could also be measured using various scales or inventories, such as the Opiate Treatment Index (OTI) (Darke 1991; Darke 1992), the Timeline Follow-Back (TFLB) (Sobell 1992), the Rutgers Alcohol Problems Index (RAPI) (White 1989), the Alcohol Use Disorders Identification Test (AUDIT) (Saunders 1993; WHO 2001), the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) (WHO 2010), or the Drug Use Disorders Identification Test (DUDIT) (Berman 2005).

Primary outcomes

Our primary outcome was extent of substance use, measured by self-report, report by companions, urine or blood samples, or other methods.

Outcomes were usually reported immediately after the end of the intervention, at short-term follow-up to six months after the end of the intervention, at medium-term follow-up of six to 12 months, and at long-term follow-up of 12 months or longer. We specified the exact duration of the follow-up period for each study.

Secondary outcomes

- Readiness to change; measured, for example, by the Readiness to Change Questionnaire (RCQ; Heather 1993)
- Retention in treatment

Search methods for identification of studies

Electronic searches

We searched the following electronic databases: Cochrane Central Register of Controlled Trials (CENTRAL) and Cochrane Drugs and Alcohol Review Group (CDAG) Register (search date: 3 November 2022); MEDLINE (via OVID) (1946 to 3 November

2022); Embase (1974 to 3 November 2022); PsycInfo (1806 to 3 November 2022); PsychExtra (1908 to 14 January 2008)*; Social, Psychological, Educational, and Criminological Trials Register of the Campell Collaboration (C2-SPECTR) (search date: 23 November 2009)*; International Bibliography of the Social Sciences (1951 to November week 3, 2009; update on 23 March 2022); Sociological Abstracts (search date: 30 November 2010; update on 23 March 2022); ISI Web of Science (search date: 3 March 2021); SveMed+ (search date: 30 November 2010; update on 24 March 2022); CINCH Australian Criminology Database (search date: 30 November 2010; update on 23 March 2022); National Criminal Justice Reference Service (NCJRS) (search date: 30 November 2010; update on 24 March 2022); SpringerLink (search date: 2 October 2010; update on 24 March 2022); Wiley Interscience (search date: 23 March 2022), DrugScope Library (search date: 2 October 2010)*; Electronic Library of the National Documentation Centre on Drug Use (search date: 2 October 2010; update on 23 March 2022); Google Scholar and Google (search date: 23 March 2022). As noted above, we included studies published in 1983 or later. For the updated search, we limited the year of publication to 2010 to date.

We searched databases using a strategy that incorporated a filter for identifying RCTs (Higgins 2017), combined with selected MeSH terms and free text terms relating to substance abuse/substance use and motivational interviewing. We adapted the MEDLINE search strategy for the other databases using the appropriate controlled vocabulary as applicable. The search strategies for all databases are shown in Appendix 1.

*We did not conduct updated searches in PsychExtra, C2-SPECTR, and DrugScope because, despite our efforts, we did not have access to the first two databases and the DrugScope library no longer exists.

We searched the following websites and mailing lists.

Websites

- www.motivationalinterview.org (bibliography updated in 2022; accessed 24 March 2022)
- nrepp.samhsa.gov/programfulldetails.asp?PROGRAM_ID=182 (accessed 24 March 2022)
- www.controlled-trials.com (last accessed 24 August 2010; update on 24 March 2022: website no longer exists)
- clinicalstudyresults.org (last accessed 24 August 2010; update on 24 March 2022: website no longer exists)
- centrewatch (last accessed 24 August 2010; update on 24 March 2022: website no longer exists)
- trialsearch.who.int (accessed on 23 March 2022)

Mailing lists

- MINT-listserv; a mailing list available to members of MINT (Motivational Interviewing Network of Trainers) (contacted on 23 March 2022)
- Australian Criminology Listserv (not used for update as mailing list no longer exists) (contacted on 23 March 2022)
- Campbell Crime & Justice Group Steering Committee (contacted on 23 March 2022)
- Crimnet: www.law.usyd.edu.au/mailman/listinfo/crimnet (contacted on 23 March 2022)

We imposed no language restrictions.

Searching other resources

We searched the reference lists of the included primary studies for further potentially relevant references.

Data collection and analysis

Selection of studies

The screening of studies proceeded in three stages. At stage one, working independently, two review authors scanned the titles of each reference. Each review author scored each reference as: 'promote to next level', 'exclude', or 'can't tell'. Only if both authors scored a reference as 'exclude' was it then excluded. If at least one author scored a reference as 'can't tell' or 'include', the reference was promoted to stage two. At stage two, working independently, two review authors read the titles and abstracts, and applied the same promotion rules. We then retrieved all references promoted to stage three in full-text form. Working independently, two review authors read the full texts and scored each as 'include' or 'exclude'. We resolved any disagreements through discussion; if we could not agree, a third review author decided whether to include the study.

For this review update, title and abstract screening was independently performed by RS, CD, SU, and SH (two teams of two), using Rayyan (Ouzzani 2016). Any disagreements were resolved through discussion between the review authors. At stage three, full-text review of retrieved articles was independently performed by RS, CD, SU, and SH (two teams of two) in Covidence (Covidence 2022). Review authors were not blinded to the names of the study authors, institutions, or journal of publication.

Data extraction and management

Working independently, two review authors performed data extraction in Covidence (Covidence 2022), using a data extraction form that contained the following information:

- General study characteristics (e.g. author, publication year, country, study design)
- Specific study characteristics (e.g. setting, number of participants, substances analysed (e.g. alcohol only, alcohol and drugs, cannabis only, cocaine only, different drugs in combination), information on randomisation, loss to follow-up)
- Participant characteristics (e.g. age (group), gender, other characteristics (e.g. being pregnant, student, veteran)
- Intervention characteristics (e.g. name of intervention, intervention content, number of sessions, duration, frequency, intervention provider, follow-up periods, quality criteria)
- Primary outcome: extent of substance use as reported in the study (e.g. drinks per day/week, heavy drinking episodes in the past month, cannabis use per day/week, club drug use, number of days used ecstasy)
- Secondary outcomes: readiness to change, retention in treatment

The review authors had access to details about authors, institutions, and journals at all times. Two authors independently extracted the data for each study; a third author then compared the extraction forms. Any disagreements were resolved through discussion. If information on outcomes or other relevant

information was missing, we contacted the corresponding author by email in order to obtain the data necessary for analysis.

Assessment of risk of bias in included studies

Working independently in two teams of two, we assessed risk of bias using version one of the Cochrane risk of bias tool (Higgins 2017). We assessed the following domains: randomisation procedure, allocation concealment, blinding of participants and providers, blinding of outcome assessors, incomplete outcome data, selective reporting, and other bias. For each domain, we rated the risk of bias as low, high, or unclear. We resolved any disagreements through discussion or by involving a fifth review author.

We assessed the risk of attrition bias (i.e. incomplete outcome data) for all outcomes, except for retention in treatment, which is often the primary outcome measure in trials on substance use. We assessed the risk of attrition bias for the other two review outcomes (i.e. extent of substance use and readiness to change) at two time points: immediately after the end of the intervention (post-intervention) and at follow-up. We assessed risk of bias for blinding of participants and providers as one domain, and blinding of outcome assessors as another.

The criteria for assessing the domain of 'other bias' were: differences between groups at baseline, collateral and biological measures to confirm self-reports of substance use, variability and contamination of conditions, and a lack of definition of a primary outcome or sample size calculation.

Measures of treatment effect

We compared the treatment and control groups for outcomes at four follow-up time points:

- post-intervention (immediately after the end of the intervention);
- short-term follow-up (up to but not including six months);
- medium-term follow-up (from six months to 12 months inclusive);
- long-term follow-up (after 12 months).

If studies measured outcomes at multiple time points, we categorised these time points as post-intervention, short-, medium-, and long-term follow-up. If studies provided data for more than one follow-up time point within one of our categories, we used the mean of the two time points.

We calculated standardised mean differences for both dichotomous and continuous data. We used 95% confidence intervals (CI) to describe the uncertainty of the intervention effects.

If studies measured and reported the same outcome in more than one way (e.g. number of drinks, number of binge-drinking events), we averaged the standardised mean differences and standard deviations of each measurement before conducting meta-analysis.

We used the optimal information size (OIS) (Pogue 1997) to assess whether the sample size was sufficient to derive a statistically significant effect in a meta-analysis. With a two-sided alpha of 0.01 and power of 0.95, we calculated that a total sample size of 1786 was necessary to detect a small standardised mean difference (SMD = 0.2). For SMDs of 0.5 (medium) and 0.8 (large), the OIS is 290 and 116, respectively. We conducted meta-analysis by following the methods described in *Comprehensive Meta-Analysis* (Borenstein 2021).

Unit of analysis issues

The unit of analysis in this review is the individual participant. Although cluster-randomised trials were eligible for inclusion, we did not include any cluster-RCTs, and thus did not need to employ the methods described in Chapter 23 of the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2023).

Dealing with missing data

Our analyses were based on the intention-to-treat principle; that is, all participants who were randomised were included in the statistical analysis and analysed according to the originally assigned group, regardless of which treatment (if any) they received. We extracted the number of participants who dropped out of the trials and used these numbers to assess the risk of attrition bias. For missing data, we attempted to contact study authors up to three times by email to obtain the required information.

Assessment of heterogeneity

We considered both methodological and clinical variance between studies before pooling studies. We assessed if there was statistically significant heterogeneity amongst primary outcomes in studies using the Chi^2 test and I^2 statistic; the latterdescribes the percentage of variability in effect estimates that is due to heterogeneity and not to sampling error (chance) (Higgins 2017). We used the following intervals for interpreting I^2: an I^2 value of less than 30% might not be important, between 30% and 60% may represent moderate heterogeneity, between 50% and 90% may represent substantial heterogeneity, and a value between 75% and 100% may represent considerable heterogeneity.

Assessment of reporting biases

Publication bias poses a significant threat to the validity of any systematic review. Where an adequate number of studies were available (more than 10 studies), we created funnel plots to assess small-study effects and to explore the possibility of publication bias.

Data synthesis

When meta-analyses were performed, we reported random-effects meta-analyses. If we judged meta-analyses to be inappropriate (e.g. if insufficient studies or data were available in a usable format), we reported the results for each individual study.

We analysed four comparisons:

- motivational interviewing versus no intervention (comparison 1);
- motivational interviewing versus treatment as usual (comparison 2);
- motivational interviewing versus assessment and feedback (comparison 3);
- motivational interviewing versus another active control intervention (comparison 4).

If more than one intervention group in a study was eligible for inclusion, we calculated the treatment effect as the weighted mean

of the results of the eligible intervention groups and compared this with the result of the control group.

Subgroup analysis and investigation of heterogeneity

To test for heterogeneity between studies, we performed visual inspections of the forest plots and investigated differences using the random-effects model and separate estimates of τ^2. We analysed variances of subgroups using the Chi^2 test and the I^2 statistic. If there was moderate or substantial heterogeneity and sufficient studies were available, we analysed the studies in the following subgroups:

- participant characteristics: student or non-students, age group (adolescents/young people versus adults);
- intervention characteristics: number and length of sessions, information on the professional background of intervention provider (e.g. psychologist, clinician, student);
- type of substance (e.g. alcohol, cannabis, multiple drugs, alcohol and drugs).

Sensitivity analysis

We conducted sensitivity analyses to assess the robustness of the results of our primary outcome by removing studies with a high or unclear risk of bias and including only studies with a low risk of bias. We assessed the impact of all five risk of bias domains independently. We only performed these analyses if a sufficient number of studies (more than 10) were available.

Summary of findings and assessment of the certainty of the evidence

We assessed the certainty of the evidence using the GRADE approach for the following outcomes: extent of substance use at four follow-up periods (post-intervention, short-, medium-, and long-term follow-up), readiness to change, and retention in treatment. The GRADE approach comprises five domains: risk of bias, inconsistency, indirectness, imprecision, and publication bias (Schünemann 2023). We present the overall certainty of evidence in the Summary of findings 1, Summary of findings 2, Summary of findings 3, and Summary of findings 4.

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

- High: we are very confident that the true effect lies close to that of the estimate of the effect.
- Moderate: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
- Low: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
- Very low: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

RESULTS

Description of studies

See Characteristics of included studies; Characteristics of excluded studies.

Results of the search

Our electronic search in November 2009 returned 1801 records, and an updated search in November 2010 produced an additional 518 records. One record – Emmen 2005 – was located via the website www.motivationalinterview.org. We found no additional records whilst searching the reference lists of included studies (in June 2010), thus making the total 2320. We excluded 2176 records on the basis of title and abstract. We retrieved the remaining 144 records in full text for further assessment. We excluded 85 studies and included 59 studies.

Our electronic search in March 2021 returned 3451 records, and an updated search in November 2022 produced an additional 333 records. A total of 12 records were identified through other sources, such as websites, organisations, and reference lists, thus making the total 3796. After removing duplicates, a total of 1997 records were subjected to title and abstract screening.

We excluded 1773 records based on title and abstract. We retrieved the remaining 224 records in full text for further assessment. Of these, we identified 55 publications associated with already included studies (29 articles) and already excluded studies (26 articles). We also identified 34 new studies eligible for inclusion. We excluded 83 new studies, listed 41 studies as 'awaiting classification', and identified 11 ongoing studies. See Figure 1.

Figure 1. PRISMA flow chart

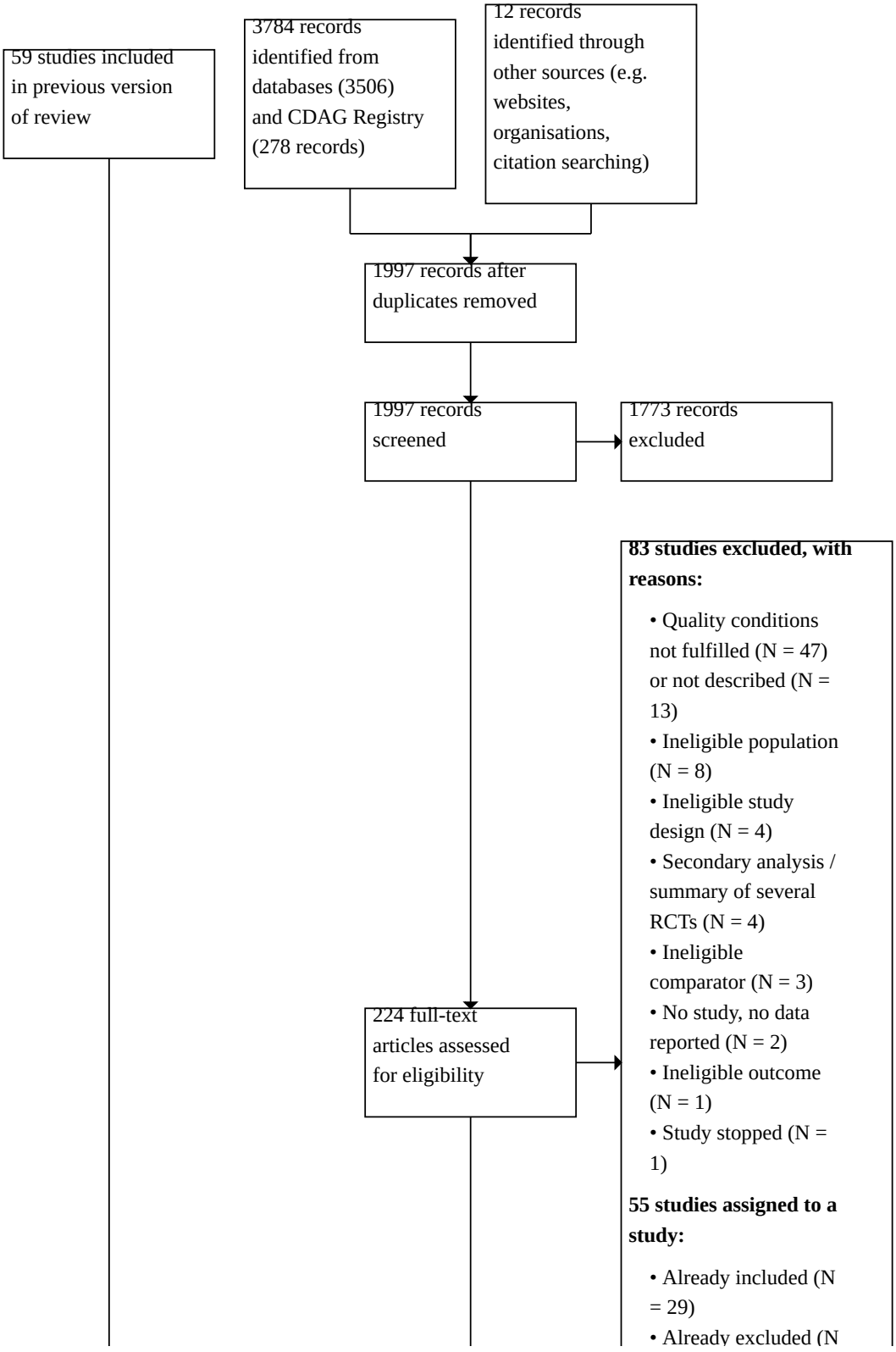
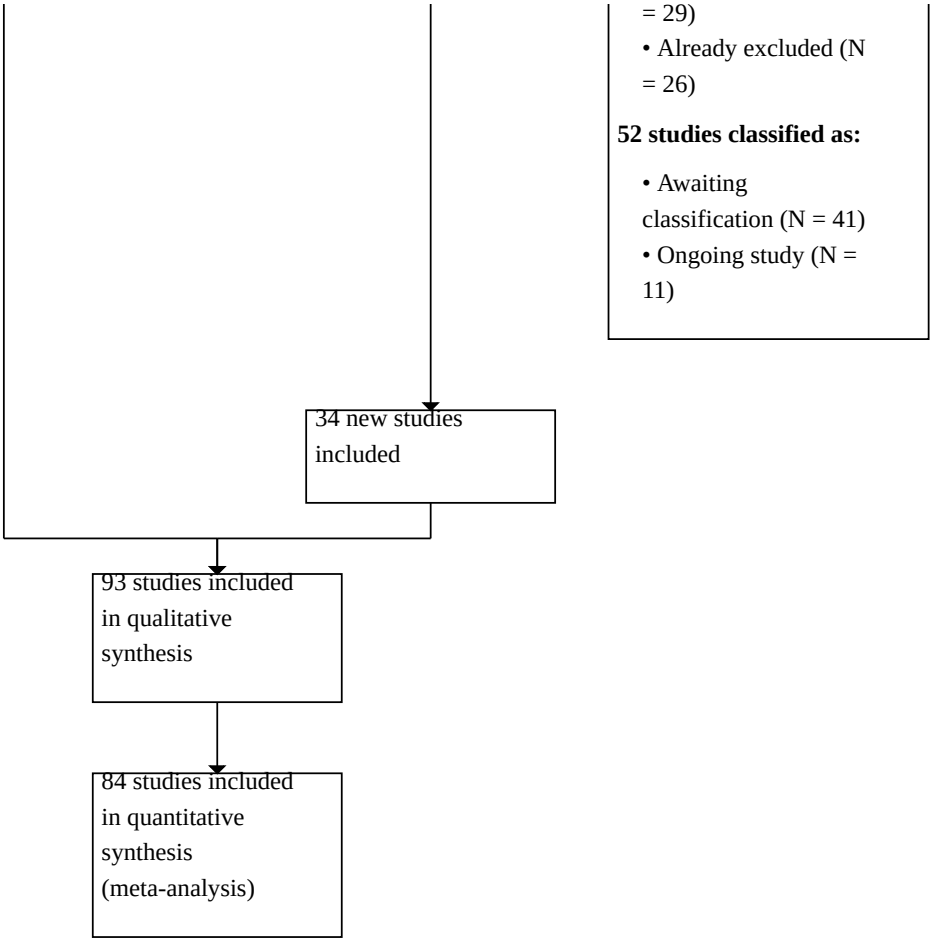


Figure 1. (Continued)



Included studies

This review includes 91 RCTs, and two quasi-RCTs (Bazargan-Hejazi 2005; Freyer-Adam 2008). We did not locate any cluster-RCTs. Full details of all the included studies are given in Characteristics of included studies.

We included 93 studies with 22,776 participants in this updated review, including 34 new studies published between 2010 and 2022 that examined 9178 participants. Of the 93 included studies, 72 were published in the USA, five in Australia, four in the United Kingdom, four in the Netherlands and two studies in Canada. One study each was published in Germany, Mexico, New Zealand, South Africa, Sweden, and Switzerland. Seventy-three studies were single-site RCTs and 20 were multisite RCTs. Study settings included inpatient and outpatient clinics, colleges, army recruitment centres, veterans' health centres, and prisons. The sample sizes ranged from 25 (Kavanagh 2004) to 1726 (MATCH 1993).

Participants

Most studies included both men and women (84 studies). Five studies included only men (Gaume 2014; Morgenstern 2009; Murphy 2018; Parsons 2009; Stotts 2006), and four included only women (Kelly 2000; Martino 2018; Stein 2010; Winhusen 2008). Fifty-four of the studies involved adults, another 19 studies examined only young adults (Alderson 2020; Barnett 2007; Borsari 2005; Borsari 2012; Carey 2006; Carroll 2006b; Colby 2018; Dermen 2011; Gaume 2014; Logan 2015; Mastroleo 2010; Mertens 2014; Murphy 2010; Parsons 2009; Schaus 2009; Stein 2017; Walters 2009; White 2006; Wood 2007), 12 studies examined adolescents (Brown 2015; Carey 2011; D'Amico 2008; D'Amico 2018; De Gee 2014; Feldstein 2007; Feldstein Ewing 2021; Mackiewicz Seghete 2022; Martin 2008; Peterson 2006; Slesnick 2013; Winters 2007), and eight studies included both adolescents and young adults (Bernstein 2009; Marsden 2006; McCambridge 2008; Murphy 2012; Naar-King 2006; Slesnick 2015; Thush 2009; Walker 2006). More specifically, 30 studies referred to patients, while others involved students (Barnett 2007; Borsari 2005; Borsari 2012; Carey 2006; Carey 2011; Colby 2018; Dermen 2011; Logan 2015; Mastroleo 2010; Murphy 2010; Schaus 2009; Walker 2006; Walters 2009; White 2006; Winters 2007; Wood 2007), veterans (Bell 2007; Bien 1993; Dieperink 2014; McDevitt-Murphy 2014; Wain 2011), pregnant women (Martino 2018; Winhusen 2008), people with HIV infection (Murphy 2012; Naar-King 2006; Parsons 2014; Stein 2002), young people classified as homeless or runaways (Peterson 2006; Slesnick 2013; Slesnick 2015), and people classified as offenders, incarcerated, or violated partners (Chanut 2007; Murphy 2018; Stein 2010).

Intervention

In 70 studies, the intervention was motivational interviewing. The remaining 23 publications referred to motivational enhancement therapy. The number of intervention sessions ranged from one to nine sessions, with one-third of studies (30) involving only one session. The duration of the intervention ranged from 10 to 148 minutes per session (see additional Table 1; Table 2; Table 3; Table 4).

Alcohol use was addressed in 43 studies, and both alcohol and other drug use in 32 studies. Ten studies focused on the use of cannabis (Bernstein 2009; Carroll 2006b; Copeland 2001; D'Amico 2008; De Gee 2014; Kadden 2007; Marijuana Treatment Project 2004; Martin 2008; Stephens 2007; Walker 2006), five studies included multiple drugs (Aharonovich 2017; Kavanagh 2004; Morgenstern 2009; Parsons 2009; Parsons 2014), and three studies focused on cocaine (Stein 2009; Stotts 2001; Stotts 2006) (see additional Table 5; Table 6; Table 7; Table 8).

Comparison

Motivational interviewing was compared with: no intervention in 34 studies (see additional Table 5); treatment as usual in 23 studies (see additional Table 6); assessment and feedback in nine studies (see additional Table 7); and another active intervention in 30 studies (see Table 8). Ninety studies reported one comparison and three studies reported two comparisons that were relevant to us. The usual treatment consisted, for example, of communicating the results of the screening, recommending abstinence from drug use, and providing psycho-educational material (e.g. Field 2020). Participants who received assessment and feedback were not counselled but instead, for example, were given written material which they could read themselves and ask questions afterwards (e.g. McDevitt-Murphy 2014). An example of a control intervention was the Alcohol and Cannabis Education (ACE) intervention offered in Feldstein Ewing 2021. The ACE condition was designed as a standard alcohol and drug education session. In contrast to motivational interviewing, the therapists did not reflect on the young people's experiences or elicit their perspectives. In addition, therapists did not ask the young people about their perceptions of their peers' substance use, or give them age-appropriate feedback about their alcohol and cannabis use. In ACE, therapists did not ask control participants how they could reduce their alcohol and cannabis use, and did not discuss harm reduction strategies (Feldstein Ewing 2021).

Outcome

Our primary outcome (extent of substance use) was reported in a variety of formats, and included continuous variables, such as total number and frequency of substance use (e.g. drinks per day, frequency of drinking, days of heavy drinking per week, days of use of primary substance) and dichotomous variables, such as substance-use status (positive, negative) or abstinence status (yes, no) (see additional Table 5; Table 6; Table 7; Table 8). Substance use was self-reported and, in some studies, verified by biological measures such as blood and urine samples.

Excluded studies

We excluded a total of 168 studies during full-text review: 85 studies in the previous version of the review plus 83 studiesin the updated version.

In the last version, the reasons for exclusion were as follows:

- 40 studies did not report fidelity checks using video or audio recordings;
- in 30 studies, substance use was not an outcome;
- 10 studies did not have participants who used substances;
- three studies did not compare motivational interviewing with another condition;
- two studies reported no results.

In the updated version, the reasons for study exclusion were as follows:

- in 60 studies, the quality conditions were either not met (47 studies) or were not described (13 studies);
- eight studies included an ineligible target population, such as parent-student dyads or probation officers trained in the use of motivational interviewing;
- ineligible study design: four studies;
- pooling of multiple RCTs: four studies;
- ineligible comparison group, such as motivational interviewing versus motivational enhancement therapy: three studies;
- two studies reported no data;
- one study assessed an ineligible outcome (reduction in HIV risk);
- one study was discontinued.

The excluded studies are listed in Characteristics of excluded studies, with reasons for their exclusion.

In addition, we listed 41 studies as awaiting classification if the publications were not available or not accessible to us (see Characteristics of studies awaiting classification). We identified 11 ongoing studies (see Ongoing studies).

Risk of bias in included studies

Full details of risk of bias assessments are given for each trial within the Characteristics of included studies table. Overall summary results of the risk of bias assessments are displayed graphically in Figure 2. A summary of the risk of bias for each included study and each domain is given in Figure 3. Overall, we judged 69 studies to be at high risk of bias in at least one domain. We deemed that the remaining 24 studies were not at high risk of bias in any domains (i.e. they each had unclear or low risk ratings in all five domains).

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

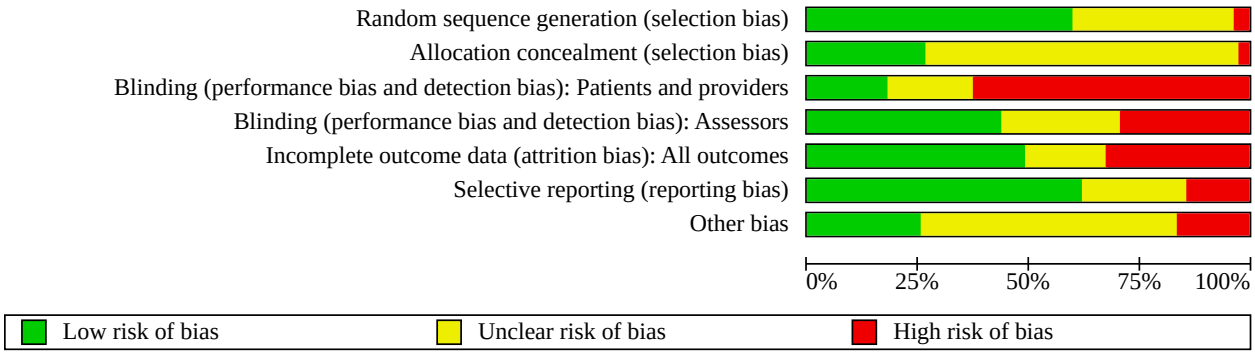


Figure 3. Methodological quality summary: review authors' judgements about each methodological quality item for each included study.

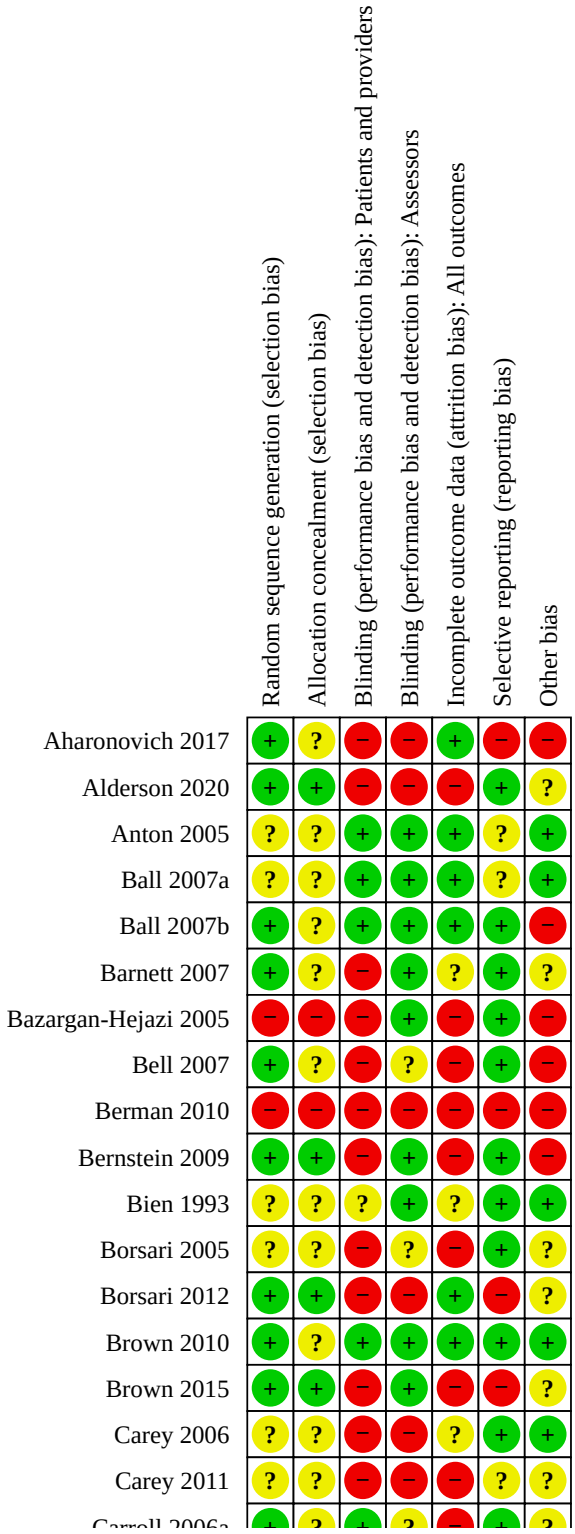


Figure 3. (Continued)

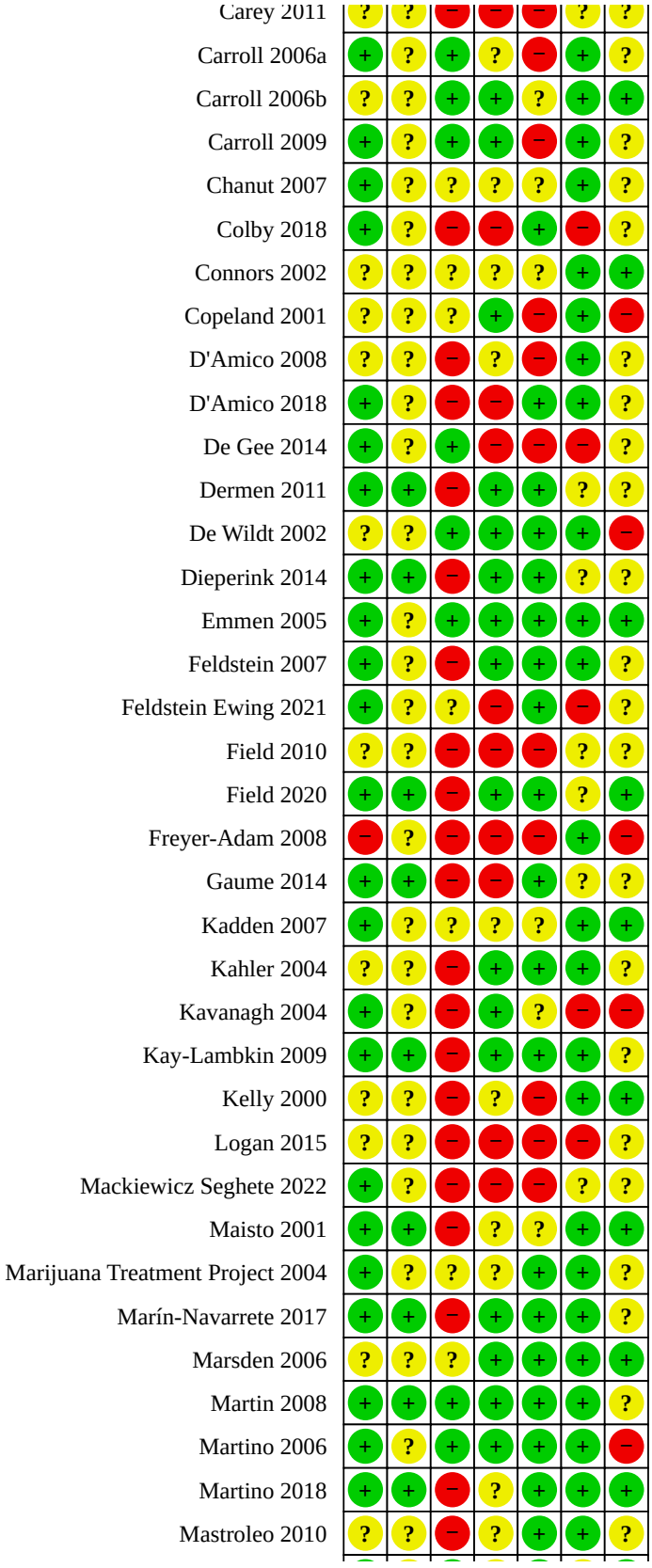


Figure 3. (Continued)

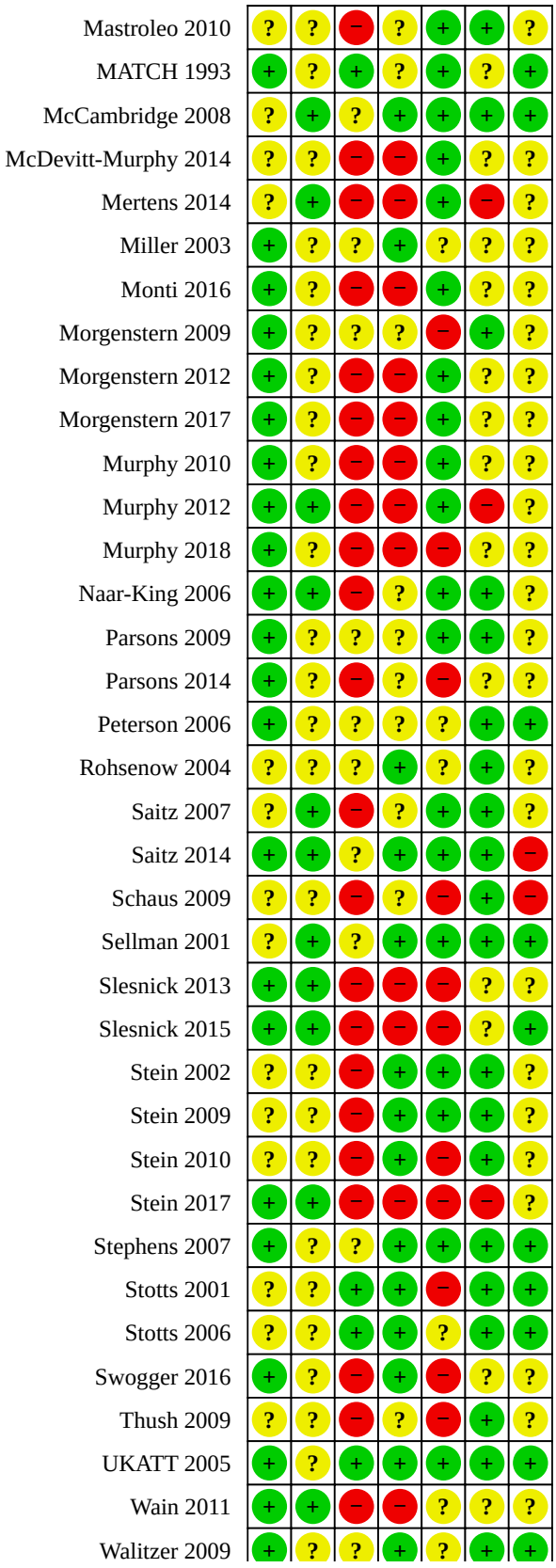
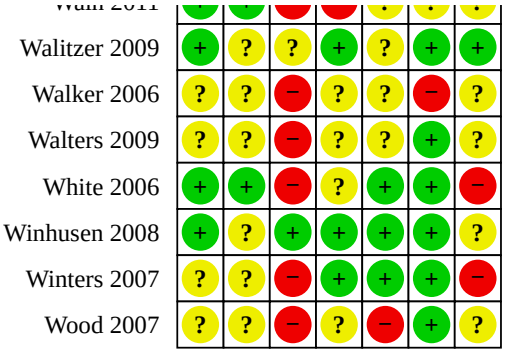


Figure 3. (Continued)



Allocation

Fifty-six studies were at low risk of bias because they used an adequate method of sequence generation (e.g. urn randomisation, computerised random number generator). We assessed 34 studies as unclear risk as they did not describe the sequence generation method, and three studies as high risk because they did not use adequate methods to generate a random allocation. Most studies inadequately described what, if anything, was done to conceal the allocation (n = 66); we therefore rated these as having an unclear risk of bias. Twenty-five studies reported adequate details (e.g. central allocation via a secure web-based system; on-site computer with a locked file that could only be accessed after entering participant data; stratified block randomisation using random allocation software by the study statistician) to ensure adequate allocation concealment.

Blinding

In 58 of the 93 studies, we rated the risk of performance and detection bias as high for participants, providers, or both, as they probably knew who was in the intervention group. In a total of 41 studies, the assessors appeared to be adequately blinded or the results were validated by physiological data; we thus assessed these as having a low risk in this domain. For the primary outcome of extent of substance use, we judged physiological and non-physiological assessment methods separately. Non-blinding of physiological outcome assessment carries a lower risk of bias than non-blinding of non-physiological outcome assessment. Both secondary outcomes (readiness to change, retention in treatment) were non-physiological.

Incomplete outcome data

We classified studies as having a low risk of bias in this domain if the number of participants lost to follow-up was clearly stated, the total number of participants lost to follow-up did not exceed 20%, and the difference between groups in terms of loss to follow-up did not exceed 20%. We judged 46 studies as low risk because they adequately accounted for incomplete outcome data. For 30 studies, we judged the risk of bias as high because losses to follow-up were higher than 20%, the reasons for losses were not described, and no intention-to-treat (ITT) analysis was reported. We judged the risk of attrition bias as unclear for 17 studies because study authors stated they used an ITT analysis but did not report this.

Selective reporting

For most studies (n = 59), we considered the risk of selective reporting as low because the expected results were adequately reported based on the stated hypothesis or published protocol. We classified the risk of bias as unclear for 21 studies (e.g. no registration or protocol available) and as high for 13 studies (e.g. not all planned outcomes were reported; substance use was only presented in graphs but reported without exact numbers; substance use at follow-up time points was incompletely reported).

Other potential sources of bias

We classified 54 studies as having an unclear risk of other sources of bias, mostly because they reported only non-physiological (self-reported) outcomes. We classified 24 studies as low risk of bias, and 15 studies as high risk for other potential sources of bias, mostly because: of differences in baseline; of different treatment during follow-up; or some participants consulted other professionals during their treatment.

Publication bias

We created funnel plots (Figure 4; Figure 5; Figure 6; Figure 7) for the primary outcome for each comparison. For the motivational interviewing versus no intervention comparison, it appears that smaller studies tend to have larger effect sizes in favour of motivational interviewing. This could be (but is not necessarily) a sign of publication bias. For the other three comparisons (motivational interviewing versus: treatment as usual; assessment and feedback; and other active treatment), the funnel plots appear to be symmetrical, which is indicative of no publication bias, although it cannot be ruled out.

Figure 4. Funnel plot of comparison 1: MI versus no intervention, outcome: extent of substance use.

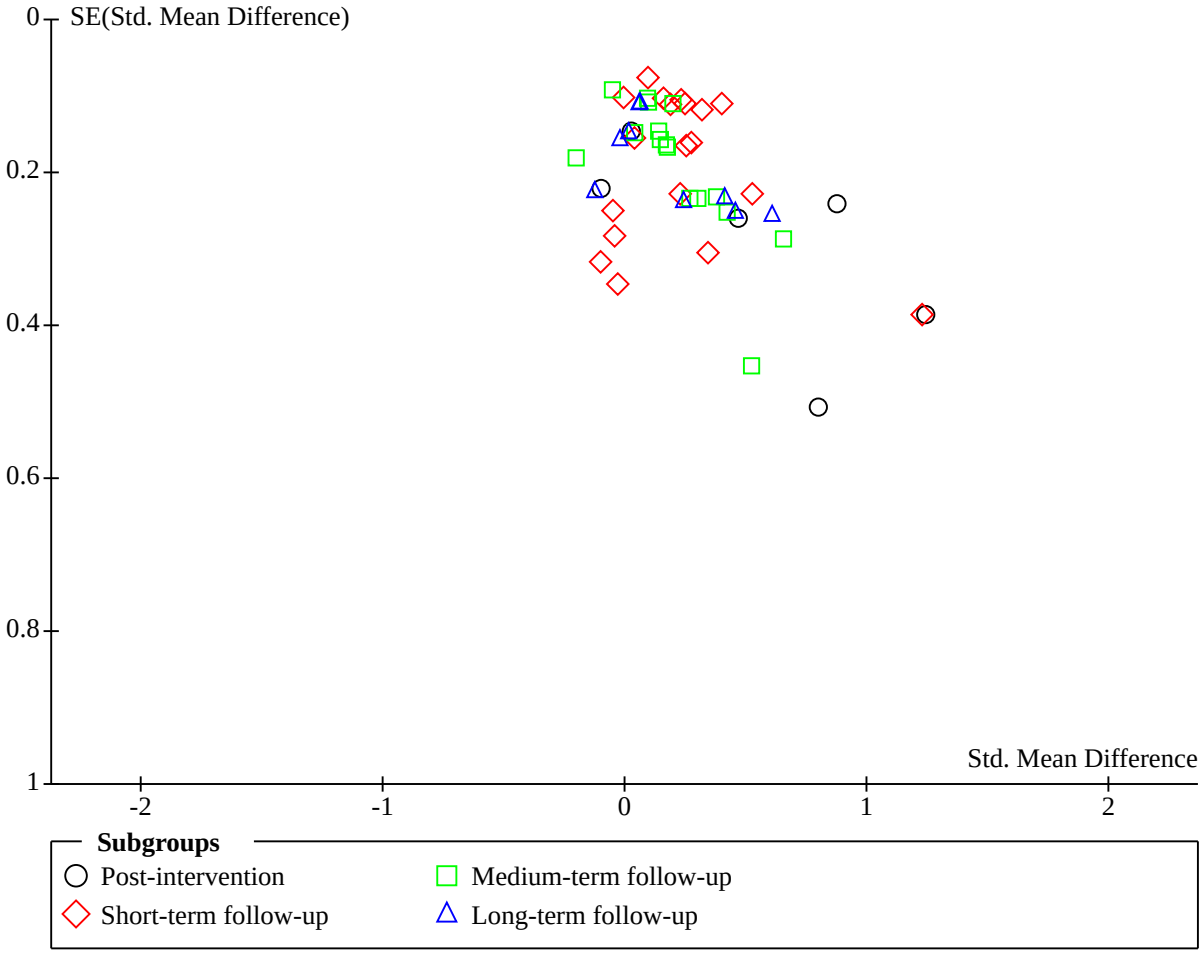


Figure 5. Funnel plot of comparison 2: MI versus treatment as usual, outcome: extent of substance use.

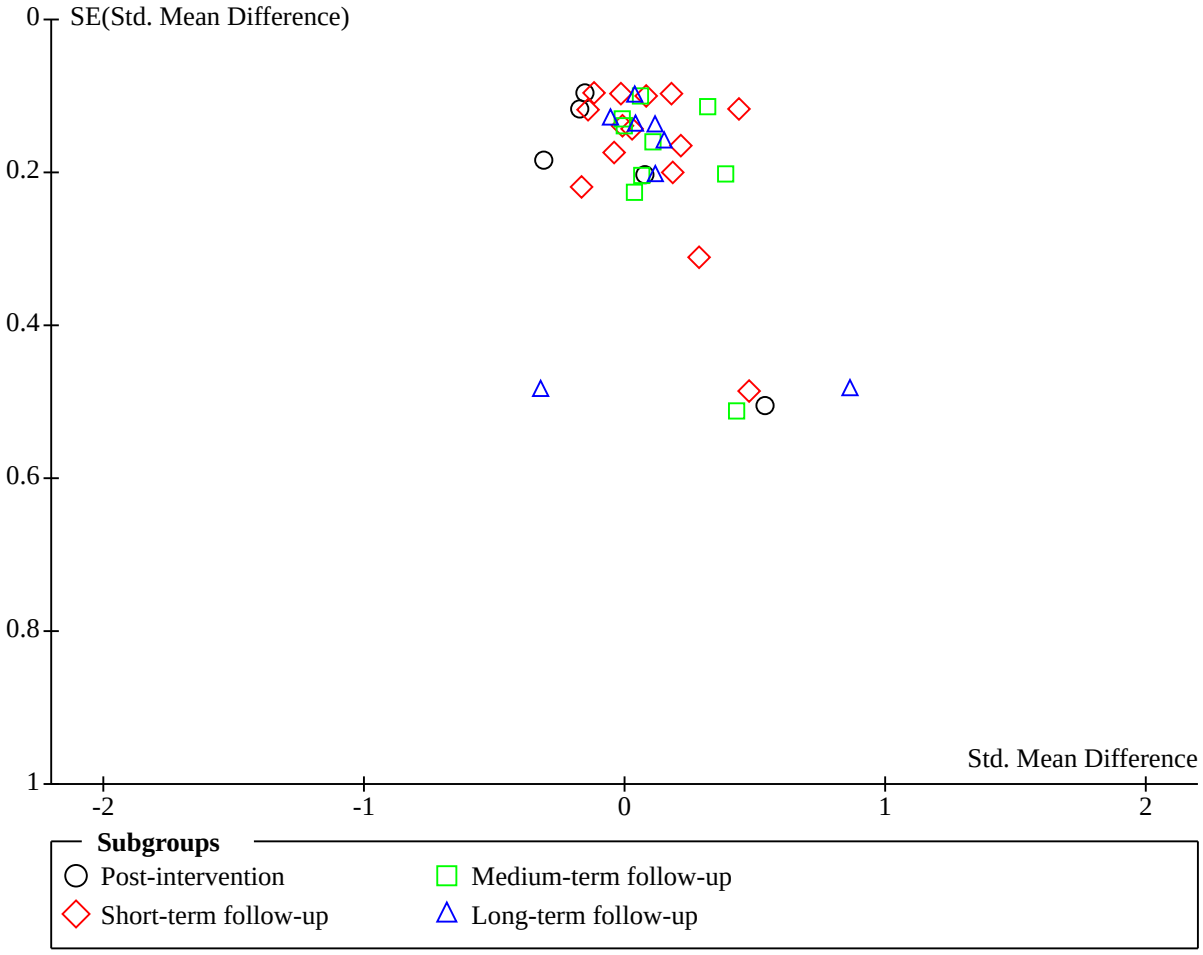


Figure 6. Funnel plot of comparison 3: MI versus assessment and feedback, outcome: extent of substance use.

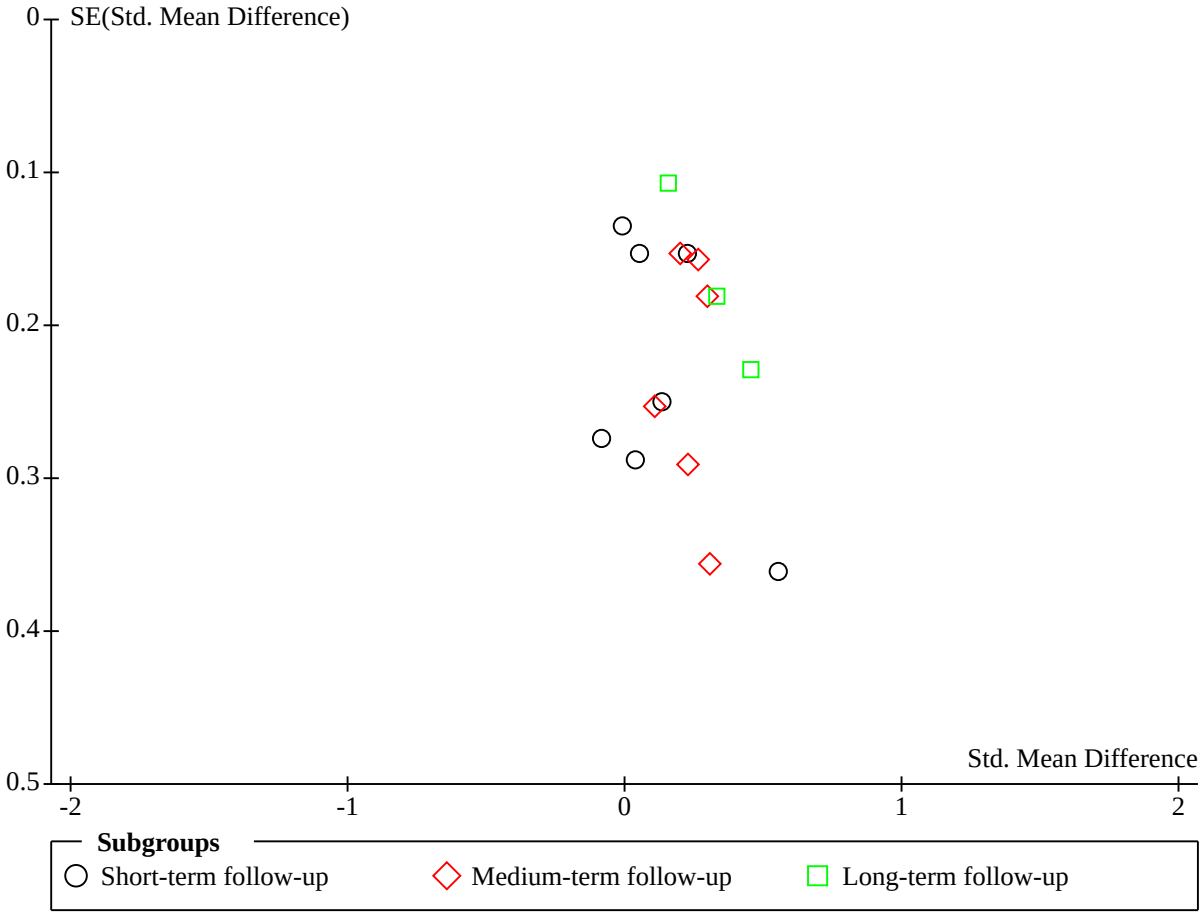
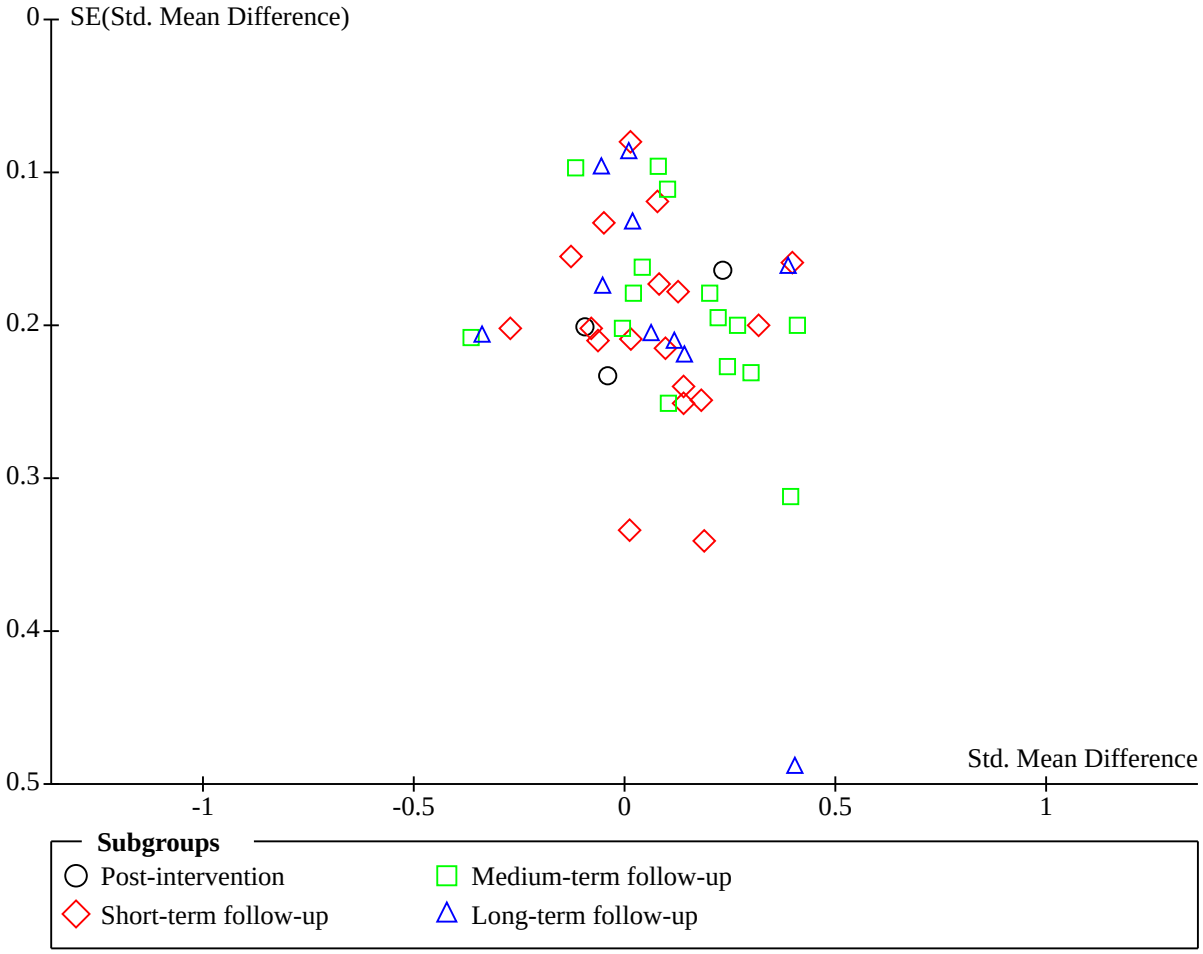


Figure 7. Funnel plot of comparison 4: MI versus other active intervention, outcome: extent of substance use.



Effects of interventions

See: **Summary of findings 1** Motivational interviewing compared with no intervention for substance-use reduction; **Summary of findings 2** Motivational interviewing compared with treatment as usual for substance-use reduction; **Summary of findings 3** Motivational interviewing compared with assessment and feedback for substance-use reduction; **Summary of findings 4** Motivational interviewing compared with other active intervention for substance-use reduction

Of the 93 included studies, we were able to extract outcome data from 87. For the remaining six studies (Field 2010; Parsons 2009; Rohsenow 2004; Stotts 2001; Swogger 2016; Thush 2009), data were not reported in the form of an effect size, and it was not possible to calculate one, even after contacting the authors to obtain the necessary data. The outcomes on substance use were reported in different formats (e.g. drinks per day, number of days with drug or alcohol use, days with heavy alcohol use, proportion of participants who were abstinent) (see Table 5; Table 6; Table 7; Table 8). In addition, data for each outcome were reported in different ways (e.g. means and standard deviations (SDs) per group, number of events, mean differences or relative risks between groups, P values). We entered all data into Comprehensive Meta-Analysis 2.0 (Borenstein 2005) and 3.3 (Borenstein 2021), which accepts data inputs in 100 different formats, and we converted all outcome data into standardised mean differences (SMD). If a study had more than one substance-use outcome at the same follow-up time point or if a study reported the same outcome at more than one follow-up time point within our follow-up categories, we calculated the mean. Finally, we entered the data into RevMan Web as generic inverse-variance data (RevMan Web 2022).

Below, we report the results for each comparison and follow-up time point. We have summarised the factors that could explain the heterogeneity in specific tables (see Table 1; Table 2; Table 3; Table 4).

Comparison 1. Motivational interviewing versus no intervention

A total of 34 studies compared motivational interviewing to a no-treatment control group.

Primary outcome: extent of substance use

All 34 studies reported results on this outcome.

Post-intervention: pooling six studies with 471 participants revealed a small to moderate benefit of motivational interviewing

compared to no intervention in reducing substance use (SMD 0.48, 95% CI 0.07 to 0.89; I^2 = 75%; low-certainty evidence; Analysis 1.1.1).

Short-term follow-up: pooling 19 studies with 3351 participants revealed a small benefit for motivational interviewing (SMD 0.20, 95% CI 0.12 to 0.28; I^2 = 27%; very low-certainty evidence; Analysis 1.1.2).

Medium-term follow-up: pooling 16 studies with 3137 participants revealed a difference in favour of motivational interviewing (SMD 0.12, 95% CI 0.05 to 0.20; I^2 = 5%; low-certainty evidence; Analysis 1.1.3).

Long-term follow-up: pooling nine studies with 1525 participants revealed no difference between groups (SMD 0.12, 95% CI -0.00 to 0.25; I^2 = 22%; very low-certainty evidence; Analysis 1.1.4).

We performed **subgroup analyses** to investigate the substantial heterogeneity (I^2 = 75%) of treatment effects on post-intervention substance use based on the characteristics shown in Table 1. All studies included both students and therapists with different professional backgrounds. Therefore, subgroup analyses were limited to different types of substances and intensity of intervention. A subgroup analysis of five studies (440 participants) on alcohol use revealed a benefit for motivational interviewing comparable to the original analysis (SMD 0.44, 95% CI -0.00 to 0.89; I^2 = 79%). A second subgroup analysis of five studies with 395 participants who received more than one motivational interviewing session revealed a slightly lower benefit for motivational interviewing (SMD 0.37, 95% CI -0.05 to 0.79) with substantial heterogeneity (I^2 = 69%).

Our **sensitivity analyses** to assess the robustness of the results revealed no difference in the treatment effects when we removed studies with high or unclear risk of bias from the analysis.

Secondary outcomes

Readiness to change

Pooling five studies with 1495 participants revealed no difference between motivational interviewing and no intervention (SMD 0.05, 95% CI -0.11 to 0.22; I^2 = 48%; very low-certainty evidence; Analysis 1.2).

Retention in treatment

Five studies considered this outcome, but we were only able to calculate the effect size for two studies with 427 participants (see Analysis 1.3). Meta-analysis revealed no difference between motivational interviewing and no intervention (SMD 0.26, 95% CI -0.0 to 0.52; I^2 = 36%; very low-certainty evidence).

Comparison 2. Motivational interviewing versus treatment as usual

A total of 23 studies compared motivational interviewing with treatment as usual.

Primary outcome: extent of substance use

All but one of the 23 studies considered this outcome.

Post-intervention: pooling five studies with 976 participants revealed a very small negative effect of motivational interviewing (SMD -0.14, 95% CI -0.27 to -0.02; I^2 = 0%; very low-certainty evidence; Analysis 2.1.1).

Short-term follow-up: pooling 14 studies with 3066 participants revealed no difference between the two groups (SMD 0.07, 95% CI -0.03 to 0.17; I^2 = 44%; low-certainty evidence; Analysis 2.1.2).

Medium-term follow-up: pooling nine studies with 1624 participants revealed a very small benefit of motivational interviewing (SMD 0.12, 95% CI 0.02 to 0.22; I^2 = 0%; low-certainty evidence; Analysis 2.1.3).

Long-term follow-up: pooling eight studies with 1449 participants found no differences between groups (SMD of 0.06, 95% CI -0.05 to 0.17; I^2 = 0%; low-certainty evidence; Analysis 2.1.4).

We performed **subgroup analyses** to explain the moderate heterogeneity (I^2 = 44%) of treatment effects on substance use at short-term follow-up based on the characteristics shown in Table 2. None of the studies included students and the professional backgrounds of the therapists varied. Therefore, subgroup analyses were limited to different types of substances, intensity of intervention, and age group. Subgroup analyses revealed differences between groups for: (a) type of substance (P = 0.0005) between the studies with users of more than one drug versus users of alcohol; and (b) intensity of the intervention (P = 0.02); but not for (c) age group, comparing adults to adolescents/young adults (P = 0.36). A subgroup analysis of 10 studies with 2496 participants who used more than one substance showed no benefit of motivational interviewing compared with treatment as usual (SMD 0.00, 95% CI -0.07 to 0.08; I^2 = 0%). A subgroup analysis of three studies with 698 participants showed a small benefit of motivational interviewing on alcohol use (SMD 0.33, 95% CI 0.16 to 0.50; I^2 = 0%). A small study with 74 participants stated no benefit of motivational interviewing on cannabis use (D'Amico 2008). A subgroup analysis of eight studies with 1921 participants and a single intervention session of motivational interviewing lasting 15 to 120 minutes showed a very small benefit of motivational interviewing compared with treatment as usual (SMD 0.14, 95% CI 0.02 to 0.27; I^2 = 37%). A subgroup analysis of six studies with 1337 participants and more than one session showed no benefit of motivational interviewing (SMD -0.05, 95% CI -0.16 to 0.05).

Our **sensitivity analyses** to assess the robustness of the results revealed no difference in the treatment effects when we removed studies with high or unclear risk of bias from the analysis.

Secondary outcomes

Readiness to change

Pooling two studies with 150 participants revealed no difference between motivational interviewing and treatment as usual (SMD 0.06, 95% CI -0.27 to 0.39; I^2 = 0%; very low-certainty evidence; Analysis 2.2).

Retention in treatment

Six studies reported on retention in treatment, but we were only able to calculate an effect size for five studies with 1295 participants, which revealed no benefit for motivational interviewing (SMD -0.09, 95% CI -0.34 to 0.16; I^2 = 0%; very low-certainty evidence; Analysis 2.3).

Comparison 3. Motivational interviewing versus assessment and feedback

Nine studies compared motivational interviewing with assessment and feedback.

Primary outcomes: extent of substance use

Post-intervention: we had no data basis to scrutinise the effect for the post-intervention time point.

Short-term follow-up: pooling seven studies with 854 participants revealed no difference between motivational interviewing and assessment and feedback (SMD 0.09, 95% CI -0.05 to 0.23; I^2 = 0%; low-certainty evidence; Analysis 3.1.1).

Medium-term follow-up: pooling six studies with 688 participants revealed a small benefit for motivational interviewing (SMD 0.24, 95% CI 0.08 to 0.40; I^2 = 0%; moderate-certainty evidence; Analysis 3.1.2).

Long-term follow-up: three studies with 448 participants showed a small benefit of motivational interviewing (SMD 0.24, 95% CI 0.07 to 0.41; I^2 = 0%; moderate-certainty evidence; Analysis 3.1.3).

As there was no indication of heterogeneity, we did not perform subgroup analyses for this comparison. We did not conduct sensitivity analyses due to the small number of studies.

Secondary outcomes

One study reported retention in treatment for a comparison between motivational interviewing and assessment and feedback (Bien 1993). We had no data basis to scrutinise the effect for the outcomes of readiness to change and retention in treatment.

Comparison 4. Motivational interviewing versus other active intervention

Thirty studies compared motivational interviewing with another active intervention.

Primary outcomes: extent of substance use

Twenty-five studies for this comparison reported on substance-use outcomes, but we were only able to summarise the results of 24 of these studies.

Post-intervention: pooling three studies with 338 participants revealed no difference between motivational interviewing and another active intervention (SMD 0.07, 95% CI -0.15 to 0.29; I^2 = 0%; low-certainty evidence; Analysis 4.1).

Short-term follow-up: pooling 18 studies with 2795 participants revealed no difference between motivational interviewing and another active intervention (SMD 0.05, 95% CI -0.03 to 0.13; I^2 = 0%). Another study reported no change in binge-drinking or concurrent use of alcohol and cannabis at one and three months (Stein 2017), based on data from 195 and 178 participants, respectively (see Table 8). We rated the certainty of the evidence as low.

Medium-term follow-up: pooling 15 studies with 2352 participants revealed no difference between the two treatments (SMD 0.08, 95% CI -0.01 to 0.17; I^2 = 13%). Two of three additional studies reported a reduction in primary drug or alcohol use at six months (Aharonovich 2017; Logan 2015). The third study reported no change in binge-drinking or concurrent use of alcohol and cannabis after six and nine months (Stein 2017), based on data from 173 and 162 participants, respectively (see Table 8). We rated the certainty of the evidence as low.

Long-term follow-up: pooling ten studies with 1908 participants revealed no difference between treatments (SMD 0.03, 95% CI -0.07 to 0.13; I^2 = 11%). One additional study reported a reduction in the use of non-injectable drugs (RR 0.54, 95% CI 0.31 to 0.94) at 12 months (Aharonovich 2017), based on data from 137 participants (see Analysis 4.1). Another study did not show reductions in binge-drinking or concurrent substance use over 12 or 15 months (Stein 2017), based on data from 161 and 160 participants, respectively (see Table 8). We rated the certainty of the evidence as low.

As there was low or no evidence of heterogeneity, we did not perform subgroup analyses for this comparison.

Our **sensitivity analyses** to assess the robustness of the results revealed no difference in the treatment effects when we removed studies with high or unclear risk of bias from the analysis.

Secondary outcomes

Readiness to change

Pooling five studies with 988 participants revealed no difference in readiness to change between motivational interviewing and another active intervention (SMD 0.15, 95% CI -0.00 to 0.30; I^2 = 19%; Analysis 4.2). Two additional studies assessed readiness to change (Murphy 2018; Winhusen 2008), but we were not able to calculate an effect size. We rated the certainty of the evidence as low.

Retention in treatment

Pooling twelve studies with 1945 participants revealed no difference between motivational interviewing and another active intervention (SMD -0.04, 95% CI -0.23 to 0.14; I^2 = 48%; moderate-certainty evidence; Analysis 4.3).

As there was moderate or low heterogeneity, we did not perform subgroup analyses for this comparison.

Grading of the evidence

Summary of findings tables 1 to 4 (Summary of findings 1, Summary of findings 2, Summary of findings 3, Summary of findings 4) summarise the results and show that the evidence was mostly of low or very low certainty. Only in three comparisons did we rate the certainty of the evidence as moderate. The downgrading of evidence was due to limitations in study design. We downgraded evidence when the randomisation procedure was not described in detail or when attrition bias was unclear or high, which was the case in many studies. There was also some uncertainty regarding incomplete reporting of bias (attrition bias), selective reporting, and other potential biases. In addition to risks of bias, we downgraded results for imprecision if the 95% CI included positive and negative effect sizes and the total number of participants was less than the optimal information size to detect a small positive effect. We also downgraded evidence certainty due to inconsistency, with moderate to substantial heterogeneity between study results for the motivational interviewing versus no intervention comparison (see Summary of findings 1). Interpretation of funnel plots (Figure 4; Figure 5; Figure 6; Figure 7) resulted in a downgrade due to publication bias for this same

comparison for the outcome extent of substance use at the medium-term follow-up time point (see Summary of findings 1). Overall, our analysis showed that there were no large effects. Dose-response gradients were not evident.

DISCUSSION

Summary of main results

This systematic review assessed the effectiveness of motivational interviewing for substance-use reduction in terms of extent of substance use, readiness to change, and retention in treatment. We included 91 RCTs and two quasi-RCTs with 22,776 participants. A total of 34 studies compared motivational interviewing to no intervention, 23 studies to treatment as usual, nine to assessment and feedback, and 30 to another active intervention.

Extent of substance use

Pooling all studies comparing motivational interviewing to no intervention revealed a small to moderate benefit of motivational interviewing post-intervention with an SMD of 0.48 (95% CI 0.07 to 0.89) and substantial heterogeneity between studies. We rated the certainty of evidence as low due to inconsistency and serious study limitations. The effect was weaker at short-term follow-up (SMD 0.20, 95% CI 0.12 to 0.28; 19 studies, 3351 participants; very low-certainty evidence). This comparison revealed a difference in favour of motivational interviewing at medium-term follow-up (SMD 0.12, 95% CI 0.05 to 0.20; 16 studies, 3137 participants) and no difference at long-term follow-up (SMD 0.12, 95% CI -0.00 to 0.25; 9 studies, 1525 participants), with low and very low certainty of evidence, respectively. There was no difference in readiness to change (SMD 0.05, 95% CI -0.11 to 0.22; 5 studies, 1495 participants; very low-certainty evidence). Retention in treatment was slightly higher with motivational interviewing (SMD 0.26, 95% CI -0.00 to 0.52; 2 studies, 427 participants; very low-certainty evidence).

Motivational interviewing did better than assessment and feedback for medium-term follow-up (SMD 0.24, 95% CI 0.08 to 0.40) and long-term follow-up (SMD 0.24, 95% CI 0.07 to 0.41) with moderate certainty of evidence in both follow-up time points. For short-term follow-up, no benefit of motivational interviewing was shown (SMD 0.09, 95% CI -0.05 to 0.23; low-certainty evidence). We had no data basis to scrutinise the effect of motivational interviewing versus assessment and feedback for the post-intervention time point.

Compared to treatment as usual or any other active intervention, there was no benefit of motivational interviewing in terms of extent of substance use at any time during follow-up. The certainty of evidence was low or very low.

Type of substance and extent of substance use

We attempted to explain the moderate or substantial heterogeneity of treatment effects in two comparisons. The substantial heterogeneity in treatment effects when comparing motivational interviewing with no intervention showed a slightly higher benefit for motivational interviewing at the post-intervention time point in studies of alcohol use and a slightly lower benefit in studies with more than one motivational interviewing session, but there was still substantial unexplained heterogeneity. The moderate heterogeneity in treatment effects when comparing motivational interviewing and treatment as usual at short-term follow-up could be explained by the higher benefit in studies of alcohol use compared to studies where more than one substance was used or where only a single intervention session of motivational interviewing was given.

Secondary outcomes

Our results revealed no effect of motivational interviewing on the outcomes of readiness to change and retention in treatment.

Overall completeness and applicability of evidence

This review examined RCTs on motivational interviewing and motivational enhancement therapy in substance use. The studies included participants from different countries and settings, with different backgrounds, and different manifestations and types of substance use. Most studies were conducted in the USA, which is an important consideration in terms of the generalisability of the results, as different social contexts may influence substance-use patterns and the availability and accessibility of an intervention.

We investigated the heterogeneity of studies where present and explored reasons for it. Our subgroup analysis showed that the difference in effect estimates was slightly higher when the substance was alcohol or fewer sessions were conducted. Our analysis also showed that the effect was smaller when participants used more than one substance.

There may be several reasons for the differences between studies. Clinical heterogeneity could be due to the populations included, which differed in terms of age, type and severity of substance use, and the substances consumed. Monitoring intervention fidelity is an important criterion to ensure that motivational interviewing adhered to Miller and Rollnick's principles and was delivered as intended. Although we paid attention to the quality conditions that should be reported in the included studies, the interventions differed to some degree in terms of the elements included (e.g. coping skills training, feedback), duration (e.g. 10 to 148 minutes), and frequency (e.g. a single session to nine sessions over several weeks or months).

In addition, studies reported on quality conditions differently, which may lead to methodological heterogeneity. For example, although some studies reported that intervention fidelity was assessed, the results were not always reported. Because of inconsistent reporting of quality conditions across studies, it was not possible to report overall fidelity of intervention implementation. Therefore, it is not possible to say whether the small differences found in this review were due to an actual lack of efficacy of motivational interviewing or whether motivational interviewing was not implemented as intended.

The research field of motivational interviewing is very active. New randomised trials are published almost monthly, which makes keeping this Cochrane review up to date challenging. For example, we have classified 11 studies as ongoing studies, with results to be published in the near future (see Ongoing studies). The motivationalinterview.org website is an ongoing source of information on new publications, and in addition, the Motivational Interviewing Network of Trainers (MINT) is a supplement to the electronic literature search.

Certainty of the evidence

We assessed the certainty of the evidence for all four comparisons and conducted GRADE ratings for the treatment effects of motivational interviewing on our primary outcome (substance use) across the four different follow-up periods, as well as for our secondary outcomes (readiness to change and retention in treatment) (see Summary of findings 1; Summary of findings 2; Summary of findings 3; Summary of findings 4).

For the motivational interviewing versus no intervention comparison, we judged the certainty of evidence to be low or very low. We downgraded the evidence due to inconsistency, serious or very serious study limitations, publication bias, or imprecision. We downgraded the certainty of the evidence by one level due to unclear or high risk of bias in the randomisation procedure in most studies or for other risks of bias, and downgraded by one additional level due to attrition bias in studies whose total weight exceeded 50% in the meta-analysis. Due to the nature of the intervention, blinding of the interventionists and participants is not possible. It is a particular methodological problem with this type of intervention because the quality of the study may be high while the certainty of the evidence is susceptible to risk of bias. The lack of blinding could potentially have led to a risk of performance or detection bias. There is also the possibility that the effects of the intervention were overestimated because participants were not blinded (Hrobjartsson 2014), and substance use was self-reported. We downgraded in cases of moderate or substantial unexplained heterogeneity between the treatment effects of different studies. The main areas of heterogeneity were different study populations, duration and frequency of the intervention, outcome measurement, and study quality. This might result in inconsistency and imprecision of the treatment effect, when the confidence interval includes very different effects and the total number of participants was lower than the optimal information size. We also reported smaller studies with larger effect sizes at short- and medium-term follow-up.

We judged the certainty of evidence as low or very low for most of the remaining comparisons and outcomes. We judged the certainty of evidence for a small benefit of motivational interviewing compared to assessment and feedback (SMD 0.24, 95% CI 0.08 to 0.40) as moderate, downgrading due to serious study limitations with unclear reporting or other risk of bias in most studies. There was comparable retention in treatment for the motivational interviewing versus other active intervention comparison (SMD -0.04, 95% CI -0.23 to 0.14), with moderate-certainty evidence. We downgraded by one level because randomisation was unclearly reported and there was a high risk of bias in most studies.

Potential biases in the review process

To reduce the risk of bias in the review process, two authors independently screened the titles and abstracts, read the full texts, extracted data, and assessed the risk of bias in the included studies. None of the review authors had a personal, scientific, or financial conflict of interest or expected to profit from the results in the form of reviewer decisions or fundraising, thereby reducing the risk of confirmation and significance bias. Additionally, we contacted authors of published studies and searched on ClinicalTrials.gov to search for unpublished studies to minimise the risk of publication bias. However, publication bias may play a role in the sense that we classified 41 studies, mostly conference abstracts, as awaiting classification as we could not find a final publication with results.

The methodological quality of a study does not necessarily correspond to the quality of the reporting of the study. Scientific journals impose strict word limits on articles, so important information about the study may not have been reported for that reason. We applied strict criteria to assess the evidence. It is possible that other reviewers would have reached different conclusions regarding the certainty of evidence, but we have tried to be clear and transparent about the judgements that underpin our decisions.

Agreements and disagreements with other studies or reviews

Our analyses revealed small effect differences for comparisons of motivational interviewing to no intervention and to assessment and feedback. Our analyses showed no differences between motivational interviewing and treatment as usual and another active intervention. Contextualising our results with those of other reviews that have examined motivational interviewing for a variety of health behaviours shows both similarities and differences (Foxcroft 2016; Klimas 2018; Lindson 2019), which we describe below.

The Lindson 2019 review on motivational interviewing for smoking cessation included 12 trials and 4157 participants. It showed no benefit of motivational interviewing compared with other interventions over medium- and long-term follow-up of over six months. As in our review, the authors note that most studies reported that motivational interviewing techniques were used but did not describe the content in detail. As in our case, this made it difficult to distinguish between studies on the basis of the type of motivational interviewing support provided, which could have provided further insight into the reasons for heterogeneity between studies. Also, similar to our study, Lindson 2019 hypothesised causes of heterogeneity, but the heterogeneity remained largely unexplained. Although they attempted to account for substantial differences in the intensity of support in both the intervention and comparison groups, it was impossible to account for all possible sources of variation across studies.

The Klimas 2018 review examined several psychosocial interventions for alcohol use, including motivational interviewing, and found no difference between interventions. However, Klimas 2018 included only two studies, which used different scales to assess alcohol use. Klimas and colleagues applied less strict inclusion criteria for studies examining motivational interviewing, which limits comparability with our review.

Similar to our findings, the Foxcroft 2016 review on motivational interviewing for the prevention of alcohol misuse in young adults reported small differences in favour of motivational interviewing for the quantity of alcohol consumed, the frequency of alcohol consumption, and alcohol problems at follow-up of less than four months. In contrast to our findings, their analysis revealed a small difference in favour of motivational interviewing for the amount of alcohol consumed and the frequency of alcohol consumption at follow-up of four months or longer. However, no difference or only a marginal difference was found for alcohol problems and binge-drinking. Further analyses revealed no clear association between the duration of the motivational interviewing intervention and the

effect size. A subgroup analysis comparing no intervention with alternative intervention controls at follow-up of less than four months suggests that motivational interviewing may not provide additional benefit compared with other alternative interventions. Overall, Foxcroft and colleagues concluded that the effect sizes were too small and, therefore, motivational interviewing has no substantial, meaningful benefit for young adults' alcohol misuse.

Overall, it is difficult to compare the results of our review with those of other reviews because of differences in the inclusion criteria used, the comparisons made, and the outcomes examined. Nevertheless, results from randomised controlled trials have shown that motivational interviewing may reduce drug and alcohol use compared with no or minimal intervention. Since motivational interviewing often involves one to four sessions, expectations and goals regarding changes in substance use should be adjusted accordingly. When motivational interviewing is compared with other psychosocial interventions, it has been found to be neither superior nor inferior, which may be because motivational interviewing shares certain characteristics with other psychosocial interventions.

AUTHORS' CONCLUSIONS

Implications for practice

Based on the evidence of 93 randomised controlled trials with 22,776 participants, this review indicates that motivational interviewing may reduce substance use compared to no intervention for a short period of time and probably reduces substance use slightly compared to assessment and feedback at medium- and long-term follow-up. We have moderate to no confidence in the evidence, so we need to be cautious about our conclusions. Given the high level of activity in motivational interviewing research, it is of utmost importance to continue to monitor primary studies. Current effect estimates and conclusions may change in light of future trials.

Implications for research

Future research could pay more attention to maximising internal validity. While blinding of participants and providers remains unfeasible for psychosocial interventions, the blinding of assessors would be possible, which would contribute to the rigour of the studies. Also, the inclusion of physiological controls to monitor self-reported consumption would contribute to more reliable statements. In addition, it is important that future studies have a sufficient sample size to demonstrate even a small effect. Emphasis should be placed on long-term randomised controlled trials addressing the enduring effectiveness of motivational interviewing, with a concerted effort to retain participants over time. Given the frequent co-occurrence of motivational interviewing with other intervention elements, a judicious approach to disentangling core components of motivational interviewing is critical to avoid confounding. The heterogeneity of motivational interviewing applications in different settings and populations underlines the importance of fidelity. Thorough adherence to the quality conditions, specifically to intervention content, training, quality assurance and fidelity, and process coding must be maintained. Detailed and systematic reporting of these aspects is essential to allow comparison between studies and to improve the quality of primary studies. Although research on how motivational interviewing works has led to a better understanding over the last few decades, it is important to continue to explore theoretical models to improve measurement tools and studies and possibly explain variability in motivational interviewing studies.

Our review did not examine medication misuse. However, given the escalating incidence of opioid misuse and related deaths, it is certainly worth considering whether a stand-alone Cochrane review should be conducted on this topic. Our exclusion of electronically-delivered interventions was intended to ensure consistency with previous versions. However, as technology continues to advance, including in health interventions, the use of technology to conduct motivational interviewing and motivational enhancement therapy should definitely be considered in future reviews. The studies included in our review come predominantly from high-income countries, with a lack of representation from middle- and low-income countries. Addressing this gap requires a deliberate pursuit of studies from a wider range of economic contexts by searching relevant databases.

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REFERENCES

References to studies included in this review

Aharonovich 2017 *{published data only}*

* Aharonovich E, Sarvet A, Stohl M, DesJarlais D, Tross S, Hurst T, et al. Reducing non-injection drug use in HIV primary care: a randomized trial of brief motivational interviewing, with and without HealthCall, a technology-based enhancement. *Journal of Substance Abuse Treatment* 2017;**74**:71-9.

Elliott JC, Delker E, Wall MM, Feng T, Aharonovich E, Tracy M, et al. Neighborhood-level drinking norms and alcohol intervention outcomes in HIV patients who are heavy drinkers. *Alcoholism: Clinical and Experimental Research* 2016;**40**(10):2240-6.

Alderson 2020 *{published and unpublished data}*

Alderson H, Kaner E, Brown R, Howel D, McColl E, Smart D, et al. Behaviour change interventions to reduce risky substance use and improve mental health in children in care: the SOLID three-arm feasibility RC. *Public Health Research* 2020;**8**(13):[no pagination].

* Alderson H, Kaner E, McColl E, Howel D, Fouweather T, McGovern R, et al. A pilot feasibility randomised controlled trial of two behaviour change interventions compared to usual care to reduce substance misuse in looked after children and care leavers aged 12-20 years: the SOLID study. *PloS One* 2020;**15**(9):e0238286.

Alderson H, McGovern R, Brown R, Howel D, Becker F, Carr L, et al. Supporting Looked After Children and Care Leavers In Decreasing Drugs, and alcohol (SOLID): protocol for a pilot feasibility randomised controlled trial of interventions to decrease risky substance use (drugs and alcohol) and improve mental health of looked after children and care leavers aged 12-20 years. *Pilot and Feasibility Studies* 2017;**3**:25.

Anton 2005 *{published data only}*

* Anton RF, Moak DH, Latham P, Waid LR, Myrick H, Voronin K, et al. Naltrexone combined with either cognitive behavioral or motivational enhancement therapy for alcohol dependence. *Journal of Clinical Psychopharmacology* 2005;**25**(4):349-57.

Baros AM, Latham PK, Moak DH, Voronin K, Anton RF. What role does measuring medication compliance play in evaluating the efficacy of naltrexone? *Alcoholism: Clinical & Experimental Research* 2007;**31**(4):596-603.

Ball 2007a *{published data only}*

* Ball SA, Todd M, Tennen H, Armeli S, Mohr C, Affleck G, et al. Brief motivational enhancement and coping skills interventions for heavy drinking. *Addictive Behaviors* 2007;**32**(6):1105-18.

Ball 2007b *{published data only}*

* Ball SA, Martino S, Nich C, Frankforter TL, Van Horn D, Crits-Christoph P, et al. Site matters: multi site randomised trial of motivational enhancement therapy in community drug abuse clinics. *Journal of Consulting & Clinical Psychology* 2007;**75**(4):556-67.

Burlew AK, Montgomery L, Kosinski AS, Forcehimes AA. Does treatment readiness enhance the response of African American substance users to Motivational Enhancement Therapy? *Psychology of Addictive Behaviors* 2013;**27**(3):744-53.

Montgomery L, Burlew AK, Kosinski AS, Forcehimes AA. Motivational enhancement therapy for African American substance users: a randomized clinical trial. *Cultural diversity & ethnic minority psychology* 2011;**17**(4):357-65.

Montgomery L, Petry NM, Carroll KM. Moderating effects of race in clinical trial participation and outcomes among marijuana-dependent young adults. *Drug and Alcohol Dependence* 2012;**126**(3):333-9.

Montgomery L. The influence of change talk and decisional balance on treatment outcomes among African American substance users. *Dissertation Abstracts International: Section B: The Sciences and Engineering* 2013;**74**(2):not specified.

Barnett 2007 *{published data only}*

* Barnett NP, Murphy JG, Colby SM, Monti PM. Efficacy of counsellor vs. computer-delivered intervention with mandated college students. *Addictive Behaviors* 2007;**32**(11):2529-48.

Mastroleo NR, Murphy JG, Colby SM, Monti PM, Barnett NP. Incident-specific and individual-level moderators of brief intervention effects with mandated college students. *Psychology of Addictive Behaviors* 2011;**25**(4):616-24.

Bazargan-Hejazi 2005 *{published data only}*

* Bazargan-Hejazi S, Bing E, Bazargan M, Der-Martirosian C, Hardin E, Bernstein J, et al. Evaluation of a brief intervention in an inner-city emergency department. *Annals of Emergency Medicine* 2005;**46**(1):67-76. [DOI: 10.1016/j.annemergmed.2004.10.014]

Bell 2007 *{published data only}*

* Bell JB. Volitional control, self-regulation, and motivational interviewing in veterans with alcohol problems. Dissertation Abstracts International: Section B: The Sciences and Engineering 2007;**68**(7-B):2008pp-B.

Berman 2010 *{published data only}*

Berman AH, Forsberg L, Durbeej N, Kallmen H, Hermansson U. Single-session motivational interviewing for drug detoxification inpatients: effects on self-efficacy, stages of change and substance use. *Substance use & misuse* 2010;**45**(3):384-402.

Bernstein 2009 *{published data only}*

* Bernstein E, Edwards E, Dorfman D, Heeren T, Bliss C, Bernstein J. Screening and brief intervention to reduce marijuana use among youth and young adults in a paediatric emergency department. *Academic Emergency Medicine* 2009;**16**(11):1174-85.

Bien 1993 *{published data only}*

* Bien TH, Miller WR, Boroughs JM. Motivational interviewing with alcohol outpatients. *Behavioural Psychotherapy* 1993;**21**(4):347-56.

Borsari 2005 *{published data only}*

* Borsari B, Carey KB. Two brief alcohol interventions for mandated college students. *Psychology of Addictive Behaviors* 2005;**19**(3):296-302.

Borsari 2012 *{published and unpublished data}*

* Borsari B, Hustad JT, Mastroleo NR, Tevyaw TO, Barnett NP, Kahler CW, et al. Addressing alcohol use and problems in mandated college students: a randomized clinical trial using stepped care. *Journal of Consulting and Clinical Psychology* 2012;**80**(6):1062-74.

Borsari B, Merrill JE, Yurasek A, Miller MB, Carey KB. Does a brief motivational intervention reduce frequency of pregaming in mandated students? *Substance Use & Misuse* 2016;**51**(8):1056-66.

Yurasek AM, Borsari B, Magill M, Mastroleo NR, Hustad JT, Tevyaw TO, et al. Descriptive norms and expectancies as mediators of a brief motivational intervention for mandated college students receiving stepped care for alcohol use. *Psychology of Addictive Behaviors: Journal of the Society of Psychologists in Addictive Behaviors* 2015;**29**(4):1003-11.

Brown 2010 *{published data only}*

* Brown TG, Dongier M, Ouimet MC, Tremblay J, Chanut F, Legault L, et al. Brief motivational interviewing for DWI recidivists who abuse alcohol and are not participating in DWI intervention: a randomised controlled trial. *Alcoholism: Clinical and Experimental Research* 2010;**34**(2):1-10.

Brown TG, Dongier M, Ouimet MC, Tremblay J, Chanut F, Legault L, et al. The role of demographic characteristics and readiness to change in 12-month outcome from two distinct brief interventions for impaired drivers. *Journal of Substance Abuse Treatment* 2012;**42**(4):383-91.

Brown 2015 *{published and unpublished data}*

Brown RA, Abrantes AM, Minami H, Prince MA, Bloom EL, Apodaca TR, et al. Motivational interviewing to reduce substance use in adolescents with psychiatric comorbidity. *Journal of Substance Abuse Treatment* 2015;**59**:20-9.

Carey 2006 *{published data only}*

* Carey KB, Carey MP, Maisto SA, Henson JM. Brief motivational interventions for heavy college drinkers: A randomised controlled trial. *Journal of Consulting and Clinical Psychology* 2006;**74**(5):943-54.

Carey 2011 *{published data only}*

Carey KB, Carey MP, Henson JM, Maisto SA, DeMartini KS. Brief alcohol interventions for mandated college students: comparison of face-to-face counseling and computer-delivered interventions. *Addiction* 2011;**106**(3):528-37.

Carroll 2006a *{published data only}*

* Carroll KM, Ball SA, Nich C, Martino S, Frankforter TL, Farentinos C, et al. Motivational interviewing to improve treatment engagement and outcome in individuals seeking treatment for substance abuse: a multisite effectiveness study. *Drug and Alcohol Dependence* 2006;**81**(3):301-12.

Carroll 2006b *{published data only}*

* Carroll KM, Easton CJ, Nich C, Hunkele KA, Neavins TM, Sinha R, et al. The use of contingency management and motivational/skills-building therapy to treat young adults with marijuana dependence. *Journal of Consulting and Clinical Psychology* 2006;**74**(5):955-66.

Olmstead TA, Sindelar JL, Easton CJ, Carroll KM. The cost-effectiveness of four treatments for marijuana dependence. *Addiction* 2007;**102**(9):1443-53.

Carroll 2009 *{published data only}*

* Carroll KM, Martino S, Ball SA, Nich C, Frankforter T, Anez LM, et al. A multi site randomised effectiveness trial of motivational enhancement therapy for Spanish-speaking substance users. *Journal of Consulting and Clinical Psychology* 2009;**77**(5):993-9.

Chanut 2007 *{published data only}*

* Chanut F, Dongier M, Legault L, Tremblay J, Nadeau L, Ouimet MC, et al. Pilot study of motivational interviewing among persons convicted of driving under the influence. *Drogues, sante et societe* 2007;**6**(2):83-115.

Colby 2018 *{published data only}*

Cassidy RN, Bernstein MH, Magill M, MacKillop J, Murphy JG, Colby SM. Alcohol demand moderates brief motivational intervention outcomes in underage young adult drinkers. *Addictive Behaviors* 2019;**98**:106044.

* Colby SM, Orchowski L, Magill M, Murphy JG, Brazil LA, Apodaca TR, et al. Brief motivational intervention for underage young adult drinkers: Results from a randomized clinical trial. *Alcoholism: Clinical and Experimental Research* 2018;**42**(7):1342-51.

Magill M, Colby SM, Orchowski L, Murphy JG, Hoadley A, Brazil LA, Barnett NP. How does brief motivational intervention change heavy drinking and harm among underage young adult drinkers? *Journal of Consulting and Clinical Psychology* 2017;**85**(5):447-58.

Magill M, Janssen T, Mastroleo N, Hoadley A, Walthers J, Barnett N, Colby S. Motivational interviewing technical process and moderated relational process with underage young adult heavy drinkers. *Psychology of Addictive Behaviors* 2019;**33**(2):128-38.

NCT01546025. Brief alcohol intervention for school-to-work transitions. clinicaltrials.gov/ct2/show/NCT01546025 (first posted 07 March 2012).

Connors 2002 *{published data only}*

* Connors GJ, Walitzer KS, Dermen KH. Preparing clients for alcoholism treatment: effects on treatment participation and outcomes. *Journal of Consulting and Clinical Psychology* 2002;**70**(5):1161-9.

Copeland 2001 *{published data only}*

* Copeland J, Swift W, Rees V. Clinical profile of participants in a brief intervention program for cannabis use disorder. *Journal of Substance Abuse Treatment* 2001;**20**:45-52.

Copeland J, Swift W, Roffman R, Stephens R. A randomised controlled trial of brief cognitive-behavioral interventions for cannabis use disorder. *Journal of Substance Abuse Treatment* 2001;**21**:55-64.

D'Amico 2008 *{published data only}*

* D'Amico EJ, Miles JN, Stern SA, Meredith LS. Brief motivational interviewing for teens at risk of substance use consequences: a randomised pilot study in a primary care clinic. *Journal of Substance Abuse Treatment* 2008;**35**(1):53-61.

Stern SA, Meredith LS, Gholson J, Gore P, D'Amico EJ. Project CHAT: a brief motivational substance abuse intervention for teens in primary care. *Journal of Substance Abuse Treatment* 2007;**32**:153-65.

D'Amico 2018 *{published data only}*

D'Amico EJ, Parast L, Shadel WG, Meredith LS, Seelam R, Stein BD. Brief motivational interviewing intervention to reduce alcohol and marijuana use for at-risk adolescents in primary care. *Journal of Consulting and Clinical Psychology* 2018;**86**(9):775-86.

De Gee 2014 *{published and unpublished data}*

De Gee EA, Verdurmen JE, Bransen E, de Jonge JM, Schippers GM. A randomized controlled trial of a brief motivational enhancement for non-treatment-seeking adolescent cannabis users. *Journal of substance abuse treatment* 2014;**47**(3):181-8.

Dermen 2011 *{published and unpublished data}*

Dermen KH, Thomas SN. Randomized controlled trial of brief interventions to reduce college students' drinking and risky sex. *Psychology of Addictive Behaviors: Journal of the Society of Psychologists in Addictive Behaviors* 2011;**25**(4):583-94.

De Wildt 2002 *{published data only}*

* De Wildt WA, Schippers GM, van den Brink W, Potgieter AS, Deckers F, Bets D. Does psychosocial treatment enhance the efficacy of Acamprosate in patients with alcohol problems? *Alcohol and Alcoholism* 2002;**37**(4):375-82.

Dieperink 2014 *{published data only}*

Dieperink E, Fuller B, Isenhart C, McMaken K, Lenox R, Pocha C, et al. Efficacy of motivational enhancement therapy on alcohol use disorders in patients with chronic hepatitis C: a randomized controlled trial. *Addiction* 2014;**109**(11):1869-77.

Emmen 2005 *{published data only}*

* Emmen MJ, Schippers GM, Wollersheim H, Bleijenberg G. Adding psychologist's intervention to physicians' advice to problem drinkers in the outpatient clinic. *Alcohol and Alcoholism* 2005;**40**(3):219-26.

Feldstein 2007 *{published data only}*

* Feldstein SW, Forcehimes AA. Motivational interviewing with underage college drinkers: a preliminary look at the role of empathy and alliance. *American Journal of Drug and Alcohol Abuse* 2007;**33**(5):737-46.

Feldstein Ewing 2021 *{published data only}*

* Feldstein Ewing S, Bryan AD, Dash GF, Lovejoy TI, Borsari B, Schmiege SJ. Randomized controlled trial of motivational interviewing for alcohol and cannabis use within a predominantly hispanic adolescent sample. *Experimental and Clinical Psychopharmacology* 2021;**30**(3):287-99. [DOI: https://doi.org/10.1037/pha0000445]

Feldstein Ewing SW. Assessing the fit of motivational interviewing by cultures with adolescents. https://clinicaltrials.gov/show/NCT01948700 2013.

Field 2010 *{published data only}*

Field CA, Caetano R. The effectiveness of brief intervention among injured patients with alcohol dependence: who benefits from brief interventions? *Drug and alcohol dependence* 2010;**111**(1):13-20.

Field 2020 *{published data only}*

Field CA, Richards DK, Castro Y, Alonso CJ, Wagler A, Sternberg K. The effects of a brief motivational intervention for alcohol use through stages of change among nontreatment seeking injured patients. *Alcoholism: Clinical and Experimental Research* 2020;**44**(11):2361-72.

Freyer-Adam 2008 *{published data only}*

* Freyer-Adam J, Coder B, Baumeister SE, Bischof G, Riedel J, Paatsch K, et al. Brief alcohol intervention for general hospital inpatients: A randomised controlled trial. *Drug and Alcohol Dependence* 2008;**93**(3):233-43.

Gaume 2014 *{published and unpublished data}*

Gaume J, Magill M, Longabaugh R, Bertholet N, Gmel G, Daeppen JB. Influence of counselor characteristics and behaviors on the efficacy of a brief motivational intervention for heavy drinking in young men — a randomized controlled trial. *Alcoholism: Clinical and Experimental Research* 2014;**38**(7):2138-47.

Kadden 2007 *{published data only}*

* Kadden RM, Litt MD, Kabela-Cormier E, Petry NM. Abstinence rates following behavioral treatments for marijuana dependence. *Addictive Behaviors* 2007;**32**(6):1220-36.

Litt MD, Kadden RM, Kabela-Cormier E, Petry NM. Coping skills training and contingency management treatments for marijuana dependence: exploring mechanisms of behavior change. *Addiction* 2008;**103**(4):638-48.

Kahler 2004 *{published data only}*

* Kahler CW, Read JP, Ramsey SE, Stuart GL, McCrady BS, Brown RA. Motivational enhancement for 12-step involvement among patients undergoing alcohol detoxification. *Journal of Consulting and Clinical Psychology* 2004;**72**(4):736-41.

Kavanagh 2004 *{published data only}*

* Kavanagh DJ, Young R, White A, Saunders JB, Wallis J, Shockley N, et al. A brief motivational intervention for substance misuse in recent-onset psychosis. *Drug and Alcohol Review* 2004;**23**(2):151-5.

Kay-Lambkin 2009 *{published data only}*

Baker A, Turner A, Kay-Lambkin FJ, Lewin TJ. The long and the short of treatments for alcohol and cannabis misuse among people with severe mental disorders. *Addictive Behaviors* 2009;**34**:852-8.

* Kay-Lambkin FJ, Baker AL, Lewin TJ, Carr VJ. Computer-based psychological treatment for comorbid depression and problematic alcohol and/or cannabis use: a randomized controlled trial of clinical efficacy. *Addiction* 2009;**104**:378-88.

Kelly 2000 *{published data only}*

* Kelly AB, Halford WK, Young RM. Maritally distressed women with alcohol problems: the impact of a short-term alcohol-focused intervention on drinking behaviour and marital satisfaction. *Addiction* 2000;**95**(10):1537-49.

Logan 2015 *{published data only}*

Logan DE, Kilmer JR, King KM, Larimer ME. Alcohol interventions for mandated students: behavioral outcomes from a randomized controlled pilot study. *Journal of Studies on Alcohol and Drugs* 2015;**76**(1):31-7.

Mackiewicz Seghete 2022 *{published data only}*

Dash GF, Chung T, Yang M, Bryan AD, Hudson KA, Feldstein Ewing SW. Examining the influence of adolescent: provider alliance on youth hazardous drinking. Findings from a randomized controlled trial. *Addictive behaviors* 2023;**136**:107499.

* Mackiewicz Seghete KL, Filbrey FM, Hudson KA, Hyun B, Feldstein Ewing SW. Time for a paradigm shift: the adolescent brain in addiction treatment. *NeuroImage: Clinical* 2022;**34**:102960. [DOI: 10.1016/j.nicl.2022.102960.]

Maisto 2001 *{published data only}*

Gordon AJ, Conigliaro J, Maisto SA, McNeil M, Kraemer KL, Kelley ME. Comparison of consumption effects of brief interventions for hazardous drinking elderly. *Substance Use and Misuse* 2003;**38**(8):1017-35.

* Maisto SA, Conigliaro J, McNeil M, Kraemer K, Conigliaro RL, Kelley ME. Effects of two types of brief intervention and readiness to change on alcohol use in hazardous drinkers. *Journal of Studies on Alcohol* 2001;**62**(5):605-14.

Marijuana Treatment Project 2004 *{published data only}*

Litt MD, Kadden RM, Stephens RS, Marijuana Treatment Project Research Group. Coping and self-efficacy in marijuana treatment: results from the marijuana treatment project. *Journal of Consulting and Clinical Psychology* 2005;**73**(6):1015-25.

* The Marijuana Treatment Project Research Group. Brief treatments for cannabis dependence: findings from a randomised multi site trial. *Journal of Consulting and Clinical Psychology* 2004;**72**(3):455-66.

Marín-Navarrete 2017 *{published data only}*

* Marín-Navarrete R, Horigian VE, Medina-Mora ME, Verdeja RE, Alonso E, Feaster DJ, et al. Motivational enhancement treatment in outpatient addiction centers: a multisite randomized trial. *International Journal of Clinical and Health Psychology* 2017;**17**(1):9-19.

Marín-Navarrete R. Study of the motivational enhancement treatment to improve treatment engagement and outcomes in Mexican patients seeking treatment for substance abuse. https://www.isrctn.com/ISRCTN91657311 2014. [DOI: https://doi.org/10.1186/ISRCTN91657311]

Marsden 2006 *{published data only}*

* Marsden J, Stillwell G, Barlow H, Boys A, Taylor C, Hunt N, et al. An evaluation of a brief motivational intervention among young ecstasy and cocaine users: no effect on substance and alcohol use outcomes. *Addiction* 2006;**101**(7):1014-26.

Martin 2008 *{published data only}*

* Martin G, Copeland J. The adolescent cannabis check-up: Randomized trial of a brief intervention for young cannabis users. *Journal of Substance Abuse Treatment* 2008;**34**(4):407-14.

Martino 2006 *{published data only}*

* Martino S, Carroll KM, Nich C, Rounsaville BJ. A randomised controlled pilot study of motivational interviewing for patients with psychotic and drug use disorders. *Addiction* 2006;**101**(10):1479-92.

Martino 2018 *{published data only}***10.1016/j.ajog.2017.12.005**

Martino S, Ondersma SJ, Forray A, Olmstead TA, Gilstad-Hayden K, Howell HB et al. Randomized controlled trial of screening and brief interventions for substance misuse in reproductive health. *American Journal of Obstetrics and Gynecology* 2018;**218**(3):322.e1-322.e12.

Mastroleo 2010 *{published data only}*

* Mastroleo NR, Turrisi R, Carney JV, Ray AE, Larimer ME. Examination of post training supervision of peer counsellors in a motivational enhancement intervention to reduce drinking in a sample of heavy-drinking college students. *Journal of Substance Abuse Treatment* 2010;**39**:289-97.

MATCH 1993 *{published data only}*

Bauer LO, Covault J, Harel O, Das S, Gelernter J, Anton R, et al. Variation in GABRA2 predicts drinking behavior in project MATCH subjects. *Alcoholism, Clinical and Experimental Research* 2007;**31**(11):1780-7.

Carroll KM, Connors GJ, Cooney NL, DiClemente CC, Donovan DM, Kadden RR, et al. Internal validity of Project MATCH treatments: discriminability and integrity. *Journal of Consulting and Clinical Psychology* 1998;**66**(2):290-303.

Davis JP, Bergman BG, Smith DC, Kelly JF. Testing a matching hypothesis for emerging adults in project MATCH: during-treatment and one-year outcomes. *Journal of Studies on Alcohol and Drugs* 2017;**78**(1):140-5.

Kuhlemeier A, Desai Y, Tonigan A, Witkiewitz K, Jaki T, Hsiao Y, et al. Applying methods for personalized medicine to the treatment of alcohol use disorder. *Journal of Consulting and Clinical Psychology* 2021;**89**(4):288-300.

Longabaugh R, Wirtz PW, Zweben A, Stout RL. Network support for drinking, Alcoholics Anonymous and long-term matching effects. *Addiction* 1998;**93**(9):1313-33.

Pfund RA, Hallgren KA, Maisto SA, Pearson MR, Witkiewitz K. Dose of psychotherapy and long-term recovery outcomes: an examination of attendance patterns in alcohol use disorder treatment. *Journal of Consulting and Clinical Psychology* 2021;**89**(12):1026-34.

Project MATCH Research Group. Matching alcoholism treatments to client heterogeneity: Project MATCH three-year drinking outcomes. *Alcoholism: Clinical and Experimental Research* 1998;**22**(6):1300-11.

Project MATCH Research Group. Matching alcoholism treatments to client heterogeneity: project MATCH posttreatment drinking outcomes. *Journal of Studies on Alcohol* 1997;**58**(1):7-29.

Project MATCH Research Group. Matching alcoholism treatments to client heterogeneity: treatment main effects and matching effects on drinking during treatment. Project MATCH Research Group. *Journal of Studies on Alcohol* 1998;**59**(6):631-9.

Project MATCH Research Group. Matching patients with alcohol disorders to treatments: clinical implications from Project MATCH. *Journal of Mental Health* 1998;**7**(6):589-602.

* Project MATCH Research Group. Project MATCH (Matching Alcoholism Treatment to Client Heterogeneity): rationale and methods for a multisite clinical trial matching patients to alcoholism treatment. *Alcoholism: Clinical and Experimental Research* 1993;**17**(6):1130-45.

Project MATCH Research Group. Project MATCH secondary a priori hypotheses. Project MATCH Research Group. *Addiction* 1997;**92**(12):1671-98.

Project Match Research Group. Therapist effects in three treatments for alcohol problems. *Psychotherapy Research* 1998;**8**(4):455-74.

Thevos AK, Thomas SE, Randall CL. Social support in alcohol dependence and social phobia: Treatment comparisons. *Research on Social Work Practice* 2001;**11**(4):458-72.

Tonigan JS, Miller WR, Juarez P, Villanueva M. Utilization of AA by Hispanic and non-Hispanic white clients receiving outpatient alcohol treatment. *Journal of Studies on Alcohol* 2002;**63**(2):215-8.

Villanueva M, Tonigan JS, Miller WR. Response of Native American clients to three treatment methods for alcohol dependence. *Journal of ethnicity in substance abuse* 2007;**6**(2):41-8.

Witkiewitz K, Hartzler B, Donovan D. Matching motivation enhancement treatment to client motivation: re-examining the Project MATCH motivation matching hypothesis. *Addiction* 2010;**105**(8):1403-13.

Wu J, Witkiewitz K. Network support for drinking: An application of multiple groups growth mixture modelling to examine client-treatment matching. *Journal of Studies on Alcohol and Drugs* 2008;**69**(1):21-9.

Zywiak WH, Longabaugh R, Wirtz PW. Decomposing the relationships between pretreatment social network characteristics and alcohol treatment outcome. *Journal of Studies on Alcohol* 2002;**63**(1):114-21.

McCambridge 2008 *{published data only}*

McCambridge J, Day M, Thomas BA, Strang J. Fidelity to Motivational Interviewing and subsequent cannabis cessation among adolescents. *Addictive Behaviors* 2011;**36**(7):749-54.

* McCambridge J, Slym RL, Strang J. Randomized controlled trial of motivational interviewing compared with drug information and advice for early intervention among young cannabis users. *Addiction* 2008;**103**(11):1809-18.

McDevitt-Murphy 2014 *{published data only}*

McDevitt-Murphy ME, Murphy JG, Williams JL, Monahan CJ, Bracken-Minor KL, Fields JA. Randomized controlled trial of two brief alcohol interventions for OEF/OIF veterans. *Journal of Consulting and Clinical Psychology* 2014;**82**(4):562-8.

Mertens 2014 *{published data only}*

Mertens JR, Ward CL, Bresick GF, Broder T, Weisner CM. Effectiveness of nurse-practitioner-delivered brief motivational intervention for young adult alcohol and drug use in primary care in South Africa: a randomized clinical trial. *Alcohol and alcoholism* 2014;**49**(4):430-8.

Miller 2003 *{published data only}*

* Miller WR, Yahne CE, Tonigan JS. Motivational interviewing in drug abuse services: a randomised trial. *Journal of Consulting andClinical Psychology* 2003;**71**(4):754-63.

Monti 2016 *{published data only}*

Celio MA, Mastroleo NR, Barnett NP, Colby SM, Kahler CW, Operario D, Monti PM. Mechanisms of behavior change in a brief dual-target motivational intervention: reduction in alcohol use mediates intervention effects on risky sex. *Psychology of Addictive Behaviors* 2019;**33**(4):349-59.

Monti PM, Mastroleo N, Barnett N, Colby S, Kahler CW, Operario D. Effects of a brief motivational intervention on alcohol and HIV/sex risk behaviors of ED patients. *Alcoholism: Clinical and Experimental Research* 2012;**36**:79A.

* Monti PM, Mastroleo NR, Barnett NP, Colby SM, Kahler CW, Operario D. Brief motivational intervention to reduce alcohol and HIV/sexual risk behavior in emergency department patients: a randomized controlled trial. *Journal of Consulting and Clinical Psychology* 2016;**84**(7):580.

Morgenstern 2009 *{published data only}*

* Morgenstern J, Bux DA, Parsons J, Hagman BT, Wainberg M, Irwin T. Randomized trial to reduce club drug use and HIV risk behaviours among men who have sex with men. *Journal of Consulting and Clinical Psychology* 2009;**77**(4):645-56.

Morgenstern 2012 *{published and unpublished data}*

Morgenstern J, Kuerbis A, Amrhein P, Hail L, Lynch K, McKay J R. Motivational interviewing: a pilot test of active ingredients and mechanisms of change. *Psychology of Addictive Behaviors* 2012;**26**(4):859-69.

Morgenstern 2017 *{published and unpublished data}*

Morgenstern J, Kuerbis A, Houser J, Levak S, Amrhein P, Shao S, et al. Dismantling motivational interviewing: effects on initiation of behavior change among problem drinkers seeking treatment. *Psychology of Addictive Behaviors* 2017;**31**(7):751-62. [DOI: https://doi.org/10.1037/adb0000317]

Murphy 2010 *{published data only}*

* Murphy JG, Dennhardt AA, Skidmore JR, Martens MP, McDevitt-Murphy ME. Computerized versus motivational interviewing alcohol interventions: impact on discrepancy, motivation, and drinking. *Psychology of Addictive Behaviors* 2010;**24**(4):628-39.

Murphy JG, Dennhardt AA, Yurasek AM, Skidmore JR, Martens MP, MacKillop J. Behavioral economic predictors of brief alcohol intervention outcomes. *Journal of Consulting and Clinical Psychology* 2015;**83**(6):1033-43.

Murphy 2012 *{published data only}*

* Murphy DA, Chen X, Naar-King S, Parsons JT. Alcohol and marijuana use outcomes in the Healthy Choices motivational interviewing intervention for HIV-positive youth. *AIDS patient care and STDs* 2012;**26**(2):95-100.

Naar-King S, Parsons JT, Murphy D, Kolmodin K, Harris DR. A multisite randomized trial of a motivational intervention targeting multiple risks in youth living with HIV: Initial effects on motivation, self-efficacy, and depression. *Journal of Adolescent Health* 2010;**46**(5):422-8.

Murphy 2018 *{published data only}*

Murphy CM, Ting LA, Jordan LC, Musser PH, Winters JJ, Poole GM, Pitts SC. A randomized clinical trial of motivational enhancement therapy for alcohol problems in partner violent men. *Journal of Substance Abuse Treatment* 2018;**89**:11-9.

Naar-King 2006 *{published data only}*

Naar-King S, Lam P, Wang B, Wright K, Parsons JT, Frey MA. Brief report: maintenance of effects of motivational enhancement therapy to improve risk behaviours and HIV-related Health in a randomised controlled trial of youth living with HIV. *Journal of Pediatric Psychology* 2008;**33**(4):441-5.

Naar-King S, Wright K, Parsons J, Frey M, Templin T, Ondersma S. Transtheoretical model and condom use in HIV+ youth. *Health Psychology* 2006;**25**(5):648-52.

Naar-King S, Wright K, Parsons J, Frey M, Templin T, Ondersma S. Transtheoretical model and substance use in HIV+ youth. *AIDS Care* 2006;**18**(7):839-45.

* Naar-King S, Wright K, Parsons JT, Frey M, Templin T, Lam P, et al. Healthy Choices: Motivational enhancement therapy for health risk behaviours in HIV-positive youth. *AIDS Education and Prevention* 2006;**18**(1):1-11.

Parsons 2009 *{published data only}*

* Parsons JT, Golub SA, Rosof E, Holder C. Motivational interviewing and cognitive-behavioral intervention to improve HIV medication adherence among hazardous drinkers: a randomized controlled trial. *Journal of Acquired Immune Deficiency Syndromes* 2007;**46**(4):443-50.

Parsons 2014 *{published data only}*

Parsons JT, Lelutiu-Weinberger C, Botsko M, Golub SA. A randomized controlled trial utilizing motivational interviewing to reduce HIV risk and drug use in young gay and bisexual men. *Journal of Consulting and Clinical Psychology* 2014;**82**(1):9-18.

Peterson 2006 *{published data only}*

* Peterson PL, Baer JS, Wells EA, Ginzler JA, Garrett SB. Short-term effects of a brief motivational intervention to reduce alcohol and drug risk among homeless adolescents. *Psychology of Addictive Behaviors* 2006;**20**(3):254-64.

Rohsenow 2004 *{published data only}*

* Rohsenow DJ, Monti PM, Martin RA, Colby SM, Myers MG, Gulliver SB, et al. Motivational enhancement and coping skills training for cocaine abusers: effects on substance use outcomes. *Addiction* 2004;**99**(7):862-74.

Saitz 2007 *{published data only}*

* Saitz R, Palfai TP, Cheng DM, Horton NJ, Freedner N, Dukes K, et al. Brief intervention for medical inpatients with unhealthy alcohol use: a randomised, controlled trial. *Annals of Internal Medicine* 2007;**146**(3):167-76.

Saitz 2014 *{published data only}*

Kim TW, Bernstein J, Cheng DM, Lloyd-Travaglini C, Samet JH, Palfai TP, et al. Receipt of addiction treatment as a consequence of a brief intervention for drug use in primary care: a randomized trial. *Addiction* 2017;**112**(5):818-27.

Kim TW, Bernstein J, Cheng DM, Samet J, Lloyd-Travaglini C, Palfai T, et al. Does screening and brief intervention for drug use in primary care increase receipt of substance use disorder treatment? *Drug and Alcohol Dependence* 2015;**156**:e111-12.

* Saitz R, Palfai TP, Cheng DM, Alford DP, Bernstein JA, Lloyd-Travaglini CA, et al. Screening and brief intervention for drug use in primary care: The ASPIRE randomized trial. *Journal of General Internal Medicine* 2014;**312**(5):502-13.

Schaus 2009 *{published data only}*

* Schaus JF, Sole ML, Mccoy TP, Mullett N, O'Brien MC. Alcohol screening and brief intervention in a college student health centre: a randomised controlled trial. *Journal of Studies on Alcohol and Drugs* 2009;**Supplement 16**:131-41.

Sellman 2001 *{published data only}*

Adamson SJ, Sellman JD. Five-year outcomes of alcohol-dependent persons treated with motivational enhancement. *Journal of Studies on Alcohol and Drugs* 2008;**69**(4):589-93.

* Sellman JD, Sullivan PF, Dore GM, Adamson SJ, MacEwan I. A randomised controlled trial of motivational enhancement therapy (MET) for mild to moderate alcohol dependence. *Journal of Studies on Alcohol* 2001;**62**(3):389-96.

Slesnick 2013 *{published and unpublished data}*

* Slesnick N, Erdem G, Bartle-Haring S, Brigham GS. Intervention with substance-abusing runaway adolescents and their families: results of a randomized clinical trial. *Journal of Consulting and Clinical Psychology* 2013;**81**(4):600-14.

Slesnick N, Guo X, Feng X. Change in parent- and child-reported internalizing and externalizing behaviors among substance abusing runaways: the effects of family and individual treatments. *Journal of Youth and Adolescence* 2013;**42**(7):980-93.

Slesnick 2015 *{published and unpublished data}*

Slesnick N, Guo X M, Brakenhoff B, Bantchevska D. A comparison of three interventions for homeless youth evidencing substance use disorders: results of a randomized clinical trial. *Journal of Substance Abuse Treatment* 2015;**54**:1-13.

Stein 2002 *{published data only}*

* Stein MD, Charuvastra A, Maksad J, Anderson BJ. A randomised trial of a brief alcohol intervention for needle exchangers (BRAINE). *Addiction* 2002;**97**(6):691-700.

Stein 2009 *{published data only}*

* Stein MD, Herman DS, Anderson BJ. A motivational intervention trial to reduce cocaine use. *Journal of Substance Abuse Treatment* 2009;**36**(1):118-25.

Stein 2010 *{published data only}*

Hebert MR, Clarke JG, Caviness CM, Ray MK, Friedmann PD, Stein MD. Feasibility of gaining access to women in jail for interventions. *Women Health* 2008;**47**:79–93.

* Stein MD, Caviness CM, Anderson BJ, Hebert M, Clarke JG. A brief alcohol intervention for hazardously drinking incarcerated women. *Addiction* 2010;**105**:466-75.

Strong DR, Caviness C, Anderson B, Brown RA, Stein M. Assessing the severity of hazardous drinking and related consequences among incarcerated women. *Alcoholism: Clinical and Experimental Research* 2010;**34**(5):907-14.

Stein 2017 *{published data only}*

NCT01473719. Emerging Adults Who Use Alcohol and Marijuana (HEAT). https://www.clinicaltrials.gov/ct2/show/NCT01473719 (first received 15 November 2011).

* Stein MD, Caviness CM, Morse EF, Grimone KR, Audet D, Herman DS et al. A developmental-based motivational intervention to reduce alcohol and marijuana use among non-treatment-seeking young adults: a randomized controlled trial. *Addiction* 2017;**113**(3):440-53.

Stephens 2007 *{published data only}*

* Stephens RS, Roffman RA, Fearer SA, Williams C, Burke RS. The Marijuana Check-up: promoting change in ambivalent marijuana users. *Addiction* 2007;**102**(6):947-57.

Stotts 2001 *{published data only}*

Stotts A, Schmitz J, Sayre S, Schwebel A, Grabowski J. Brief motivational enhancement therapy prior to relapse prevention for cocaine dependent patients. 61st Annual Scientific Meeting of the College on Problems of Drug Dependence 1999;**Cochrane Central Register of Controlled Trials (CENTRAL) Issue 2**:218.

Stotts AL, Schmitz JM, Bordnick PS, Schwebel AK. An outpatient cocaine detoxification program using motivational enhancement therapy. *NIDA Research Monograph.* 1997;**178**:98.

* Stotts AL, Schmitz JM, Rhoades HM, Grabowski J. Motivational interviewing with cocaine-dependent patients: a pilot study. *Journal of Consulting and Clinical Psychology* 2001;**69**(5):858-62.

Stotts 2006 *{published data only}*

* Stotts AL, Potts GF, Ingersoll G, George MR, Martin LE. Preliminary feasibility and efficacy of a brief motivational intervention with psychophysiological feedback for cocaine abuse. *Substance Abuse* 2006;**27**(4):9-20.

Swogger 2016 *{published data only}*

Catterall I, Mitchell SM, Dhingra K, Conner KR, Swogger MT. Brief motivational intervention for substance use may decrease violence among heavy alcohol users in a jail diversion program. *Criminal Justice and Behavior* 2021;**48**(3):274-92.

* Swogger MT, Conner KR, Caine ED, Trabold N, Parkhurst MN, Prothero LM, Maisto SA. A test of core psychopathic traits as a moderator of the efficacy of a brief motivational intervention for substance-using offenders. *Journal of Consulting and Clinical Psychology* 2016;**84**(3):248.

Thush 2009 *{published data only}*

* Thush C, Wiers RW, Moerbeek M, Ames SL, Grenard JL, Sussman S, et al. Influence of motivational interviewing on explicit and implicit alcohol-related cognition and alcohol use in at-risk adolescents. *Psychology of Addictive Behaviors* 2009;**23**(1):146-51.

UKATT 2005 *{published data only}*

Dale V, Coulton S, Godfrey C, Copello A, Hodgson R, Heather N, et al. Exploring treatment attendance and its relationship to outcome in a randomized controlled trial of treatment for alcohol problems: secondary analysis of the UK Alcohol Treatment Trial (UKATT). *Alcohol and Alcoholism* 2011;**46**(5):592-9.

Gaume J, Heather N, Tober G, McCambridge J. Active ingredients of treatment for alcohol problems: a mediator analysis of data from the UK alcohol treatment trial (UKATT). *Alcoholism: Clinical and Experimental Research* 2016;**40**:65A.

Orford J, Hodgson R, Copello A, Krishnan M, de Madariaga M, Coulton S. Treatment: what was useful about that session? Clients' and therapists' comments after sessions in the UK alcohol treatment trial (UKATT). *Alcohol and Alcoholism* 2009;**44**(3):306-13.

Orford J, Hodgson R, Copello A, Wilton S, Slegg G. To what factors do clients attribute change? Content analysis of follow-up interviews with clients of the UK Alcohol Treatment Trial. *Journal of Substance Abuse Treatment* 2009;**36**(1):49-58.

UKATT Research Team. Cost effectiveness of treatment for alcohol problems: findings of the randomised UK alcohol treatment trial (UKATT). *BMJ* 2005;**331**(7516):544.

* UKATT Research Team. Effectiveness of treatment for alcohol problems: findings of the randomised UK alcohol treatment trial (UKATT). *BMJ* 2005;**331**(7516):541.

UKATT Research Team. UK Alcohol Treatment Trial: client-treatment matching effects. *Addiction* 2008;**103**(2):228-38.

Wain 2011 *{published data only}*

Wain RM, Wilbourne PL, Harris KW, Pierson H, Teleki J, Burling TA, Lovett S. Motivational interview improves treatment entry in homeless veterans. *Drug and Alcohol Dependence* 2011;**115**(1):113-9.

Walitzer 2009 *{published data only}*

* Walitzer KS, Dermen KH, Barrick C. Facilitating involvement in Alcoholics Anonymous during out-patient treatment: a randomised clinical trial. *Addiction* 2009;**104**(3):391-401.

Walker 2006 *{published data only}*

* Walker DD, Roffman RA, Stephens RS, Wakana K, Berghuis J, Kim W. Motivational enhancement therapy for adolescent marijuana users: a preliminary randomised controlled trial. *Journal of Consulting and Clinical Psychology* 2006;**74**(3):628-32.

Walters 2009 *{published data only}*

* Walters ST, Vader AM, Harris TR, Field CA, Jouriles EN. Dismantling motivational interviewing and feedback for college drinkers: a randomised clinical trial. *Journal of Consulting and Clinical Psychology* 2009;**77**(1):64-73.

White 2006 *{published data only}*

Mun EY, White HR, Morgan TJ. Individual and situational factors that influence the efficacy of personalized feedback substance use interventions for mandated college students. *Journal of Consulting and Clinical Psychology* 2009;**77**(1):88-102.

* White HR, Morgan TJ, Pugh LA, Celinska K, Labouvie EW, Pandina RJ. Evaluating two brief substance-use interventions for mandated college students. *Journal of Studies on Alcohol* 2006;**67**:309-17.

White HR, Mun EY, Pugh L, Morgan TJ. Long-term effects of brief substance use interventions for mandated college students: sleeper effects of an in-person personal feedback intervention. *Alcoholism: Clinical and Experimental Research* 2007;**31**(8):1380-91.

Winhusen 2008 *{published data only}*

Ondersma SJ, Winhusen T, Erickson SJ, Stine SM, Wang Y. Motivation enhancement therapy with pregnant substance-abusing women: does baseline motivation moderate efficacy? *Drug and Alcohol Dependence* 2009;**101**(1-2):74-9.

Ondersma SJ, Winhusen T, Lewis DF. Pre-treatment change in a randomized trial with pregnant substance-abusing women in community-based outpatient treatment. *Contemporary Clinical Trials* 2012;**33**(5):1074-9.

Osterman R, Lewis D, Winhusen T. Efficacy of motivational enhancement therapy to decrease alcohol and illicit-drug use in pregnant substance users reporting baseline alcohol use. *Journal of Substance Abuse Treatment* 2017;**77**:150-5.

* Winhusen T, Kropp F, Babcock D, Hague D, Erickson SJ, Renz C, et al. Motivational enhancement therapy to improve treatment utilization and outcome in pregnant substance users. *Journal of Substance Abuse Treatment* 2008;**35**:161-73.

Winters 2007 *{published data only}*

* Winters KC, Leitten W. Brief intervention for drug-abusing adolescents in a school setting. *Psychology of Addictive Behaviors* 2007;**21**(2):249-54.

Wood 2007 *{published data only}*

Capone C, Wood MD. Thinking about drinking: need for cognition and readiness to change moderate the effects of brief alcohol interventions. *Psychology of Addictive Behaviors* 2009;**23**(4):684-8.

* Wood MD, Capone C, Laforge R, Erickson DJ, Brand NH. Brief motivational intervention and alcohol expectancy challenge with heavy drinking college students: A randomised factorial study. *Addictive Behaviors* 2007;**32**(11):2509-28.

References to studies excluded from this review

Acuff 2019 *{published data only}*

Acuff SF, Voss AT, Dennhardt AA, Borsari B, Martens MP, Murphy JG. Brief motivational interventions are associated with reductions in alcohol-induced blackouts among heavy drinking college students. *Alcoholism: Clinical and Experimental Research* 2019;**43**(5):988-96.

Adamson 2001 *{published data only}*

* Adamson SJ, Selman JD. Drinking goal selection and treatment outcome in outpatients with mild-moderate alcohol dependence. *Drug and Alcohol Review* 2001;**20**:351-9.

Allen 2011 *{published data only}*

Allen E, Polikina O, Saburova L, McCambridge J, Elbourne D, Pakriev S, et al. The efficacy of a brief intervention in reducing hazardous drinking in working age men in Russia: the HIM (Health for Izhevsk men) individually randomised parallel group exploratory trial. *Trials* 2011;**12**:238.

Aubrey 1998 *{published data only}*

* Aubrey LL. Motivational interviewing with adolescents presenting for outpatient substance abuse treatment. Dissertation Abstracts International: Section B: The Sciences and Engineering 1998;**59**(3-B):Sep-B.

Baer 2001 *{published data only}*

* Baer JS, Kivlahan DR, Blume AW, McKnight P, Marlatt GA. Brief intervention for heavy-drinking college students: 4-year follow-up and natural history. *American Journal of Public Health* 2001;**91**(8):1310-6.

Bagoien 2013 *{published data only}*

Bagoien G, Bjorngaard JH, Ostensen C, Reitan SK, Romundstad P, Morken G. The effects of motivational interviewing on patients with comorbid substance use admitted to a psychiatric emergency unit — a randomised controlled trial with two year follow-up. *BMC Psychiatry* 2013;**13**:93.

Baker 1993 *{published data only}*

* Baker A, Heather N, Wodak A, Dixon J, Holt P. Evaluation of a cognitive-behavioural intervention for HIV prevention among injecting drug users. *AIDS* 1993;**7**(2):247-56.

Baker 2001 *{published data only}*

Baker A, Boggs T, Lewin T. Characteristics of regular amphetamine users and implications for treatment. *Drug and Alcohol Review* 2001;**20**:49-56.

* Baker A, Boggs TG, Lewin TJ. Randomized controlled trial of brief cognitive-behavioural interventions among regular users of amphetamine. *Addiction* 2001;**96**(9):1279-87.

Baker A, Lee NK, Claire M, Lewin TJ, Grant T, Pohlman S, et al. Drug use patterns and mental health of regular amphetamine users during a reported "heroin drought". *Addiction* 2004;**99**:875-84.

Baker 2002 *{published data only}*

* Baker A, Lewin T, Reichler H, Clancy R, Carr V, Garrett R, et al. Evaluation of a motivational interview for substance use within psychiatric in-patient services. *Addiction* 2002;**97**(10):1329-37.

Baker 2002b *{published data only}*

* Baker A, Lewin T, Reichler H, Clancy R, Carr V, Garrett R, et al. Motivational interviewing among psychiatric in-patients with substance use disorders. *Acta Psychiatrica Scandinavica* 2002;**106**(3):233-40.

Baker 2005 *{published data only}*

* Baker A, Lee NK, Claire M, Lewin TJ, Grant T, Pohlman S, et al. Brief cognitive behavioural interventions for regular amphetamine users: a step in the right direction. *Addiction* 2005;**100**(3):367-78.

Baker 2006 *{published data only}*

* Baker A, Bucci S, Lewin TJ, Kay-Lambkin F, Constable PM, Carr VJ. Cognitive-behavioural therapy for substance use disorders in people with psychotic disorders: randomised controlled trial. *British Journal of Psychiatry* 2006;**188**:439-48.

Barrowclough 2000 *{published data only}*

* Barrowclough C, Haddock G, Tarrier N, Moring J, Lewis S. Cognitive behavioral intervention for individuals with severe mental illness who have a substance misuse problem. *Psychiatric Rehabilitation Skills* 2000;**4**(2):216-33.

Bechdolf 2012 *{published data only}*

Bechdolf A, Pohlmann B, Guttgemanns J, Geyer C, Lindner K, Ferber C, et al. State-dependent motivational interviewing for people with schizophrenia and substance use: results of a randomised controlled trial. *Der Nervenarzt* 2012;**83**(7):888-96.

Beckham 2007 *{published data only}*

* Beckham N. Motivational interview with hazardous drinkers. *Journal of the American Academy of Nurse Practitioners* 2007;**19**(2):103-10.

Begun 2011 *{published data only}*

Begun AL, Rose SJ, Lebel TP. Intervening with women in jail around alcohol and substance abuse during preparation for community reentry. *Alcoholism Treatment Quarterly* 2011;**29**(4):453-78.

Bernstein 2005 *{published data only}*

* Bernstein J, Bernstein E, Tassiopoulos K, Heeren T, Levenson S, Hingson R. Brief motivational intervention at a clinic visit reduces cocaine and heroin use. *Drug and Alcohol Dependence* 2005;**77**(1):49-59.

Blondell 2011 *{published data only}*

Blondell RD, Frydrych LM, Jaanimagi U, Ashrafioun L, Homish GG, Foschio EM, et al. A randomized trial of two behavioral interventions to improve outcomes following inpatient detoxification for alcohol dependence. *Journal of Addictive Diseases* 2011;**30**(2):136-48.

Blow 2010 *{published data only}*

Blow FC, Walton MA, Murray R, Cunningham RM, Chermack ST, Barry KL, et al. Intervention attendance among emergency department patients with alcohol- and drug-use disorders. *Journal of Studies on Alcohol and Drugs* 2010;**71**(5):713-9.

Bohnert 2016 *{published data only}*

Bohnert AS, Blow F, Cunningham R, Thomas L, Greenwald MK, Chermack S, et al. A randomized clinical trial of a behavioral intervention to reduce opioid overdose risk behavior. *Drug and Alcohol Dependence* 2015;**156**:e22.

* Bohnert AS, Bonar EE, Cunningham R, Greenwald MK, Thomas L, Chermack S, et al. A pilot randomized clinical trial of an intervention to reduce overdose risk behaviors among emergency department patients at risk for prescription opioid overdose. *Drug and Alcohol Dependence* 2016;**163**:40-7.

Booth 1998 *{published data only}*

* Booth RE, Kwiatkowski C, Iguchi MY, Pinto F, John D. Facilitating treatment entry among out-of-treatment injection drug users. *Public Health Reports* 1998;**113 Suppl 1**:116-28.

Borsari 2000 *{published data only}*

* Borsari B, Carey KB. Effects of a brief motivational intervention with college student drinkers. *Journal of Consulting and Clinical Psychology* 2000;**68**(4):728-33.

Brown 2009 *{published data only}*

* Brown RA, Strong DR, Abrantes AM, Myers MG, Ramsey SE, Kahler CW. Effects on substance use outcomes in adolescents receiving motivational interviewing for smoking cessation during psychiatric hospitalisation. *Addictive Behaviors* 2009;**34**(10):887-91.

Bruguera 2021 *{published data only}*

Bruguera P, Barrio P, Manthey J, Oliveras C, López-Pelayo H, Nuño L, et al. Mid and long-term effects of a SBIRT program for at-risk drinkers attending to an emergency department. Follow-up results from a randomized controlled trial. *European Journal of Emergency Medicine* 2021;**28**(5):373-9. [DOI: 10.1097/MEJ.0000000000000810]

Bucci 2010 *{published data only}*

Bucci S, Baker A, Halpin SA, Hides L, Lewin TJ, Carr VJ, et al. Intervention for cannabis use in young people at ultra high risk for psychosis and in early psychosis. *Mental Health and Substance Use: Dual Diagnosis* 2010;**3**(1):66-73.

Butler 2009 *{published data only}*

* Butler LH, Correia CJ. Brief alcohol intervention with college student drinkers: face-to-face versus computerized feedback. *Psychology of Addictive Behaviors* 2009;**23**(1):163-7.

Carey 2013 *{published data only}*

Carey KB, DeMartini KS, Prince MA, Luteran C, Carey MP. Effects of choice on intervention outcomes for college students sanctioned for campus alcohol policy violations. *Psychology of Addictive Behaviors* 2013;**27**(3):596-603.

Ceperich 2002 *{published data only}*

* Ceperich SD, Ingersoll KS, Nettleman MD. Preventing alcohol-exposed pregnancies in college women. *Drug and Alcohol Dependence* 2002;**66 Suppl 1**:29.

Ceperich 2011 *{published data only}*

Ceperich SD, Ingersoll KS. Motivational interviewing + feedback intervention to reduce alcohol-exposed pregnancy risk among college binge drinkers: determinants and patterns of response. *Journal of Behavioral Medicine* 2011;**34**(5):381-95.

Chartier 2015 *{published data only}*

Chartier KG, Carmody T, Akhtar M, Stebbins MB, Walters ST, Warden D. Hispanic subgroups, acculturation, and substance abuse treatment outcomes. *Journal of Substance Abuse Treatment* 2015;**59**:74-82.

Chavez 2003 *{published data only}*

* Chavez R, Miller WR, Tonigan JS. Negative consequences, substance use, and motivation for change: a predictive model of drug abusers motivation to change behavior. In: 65th Annual Scientific Meeting of the College on Problems of Drug Dependence. Vol. 65. 2003:Cochrane ID: CN-00462116.

Christoff 2015 *{published data only}*

Christoff Ade O, Boerngen-Lacerda R. Reducing substance involvement in college students: a three-arm parallel-group randomized controlled trial of a computer-based intervention. *Addictive Behaviors* 2015;**45**:164-71.

Clarke 2011 *{published data only}*

Clarke JG, Anderson BJ, Stein MD. Hazardously drinking women leaving jail: time to first drink. *Journal of Correctional Health Care* 2011;**17**(1):61-8.

Clinton-Sherrod 2008 *{published data only}*

* Clinton-Sherrod AM, Morgan-Lopez AA, Olmstead KLR, Brown JM. The effects of a Motivational Interviewing intervention to reduce college drinking on reports of pressured or force sex at 3-month follow up. *Alcoholism-Clinical and Experimental Research* 2008;**32**(6):191A.

Clinton-Sherrod 2011 *{published data only}*

* Clinton-Sherrod M, Morgan-Lopez AA, Brown JM, McMillen BA, Cowell A. Incapacitated sexual violence involving alcohol among college women: the impact of a brief drinking intervention. *Violence Against Women* 2011;**17**(1):135-54.

Cowell AJ, Brown JM, Mills MJ, Bender RH, Wedehase BJ. Cost-effectiveness analysis of motivational interviewing with feedback to reduce drinking among a sample of college students. *Journal of Studies on Alcohol and Drugs* 2012;**73**(2):226-37.

Coriale 2019 *{published data only}*

Coriale G, De Rosa F, Battagliese G, Gencarelli S, Fiore M, Ferraguti G, et al. Motivational enhancement therapy versus cognitive behavioral therapy in a cohort of men and women with alcohol use disorder. *Biomedical Reviews* 2019;**30**:125-35.

Corrigan 2005 *{published data only}*

Corrigan JD, Bogner J, Lamb-Hart G, Heinemann AW, Moore D. Increasing substance abuse treatment compliance for persons with traumatic brain injury. *Psychology of Addictive Behaviors* 2005;**19**(2):131-9.

Crane 2015 *{published data only}*

* Crane CA, Eckhardt CI, Schlauch RC. Motivational enhancement mitigates the effects of problematic alcohol use on treatment compliance among partner violent offenders: results of a randomized clinical trial. *Journal of Consulting and Clinical Psychology* 2015;**83**(4):689-95.

Crane CA, Eckhardt CI, Schlauch RC. The effects of motivational interviewing on treatment compliance among partner violent off enders with alcohol use problems. *Alcoholism: Clinical and Experimental Research* 2015;**39**:211A.

D'Angelo 2005 *{published data only}*

* D'Angelo MS. A comparative study of motivational interviewing and traditional treatment approach on movement along stages of change, treatment completion, compliance with aftercare plan, and length of abstinence. Dissertation Abstracts International: Section B: The Sciences and Engineering 2006;**66**(7B):3935.

Daeppen 2011 *{published data only}*

Daeppen JB, Bertholet N, Gaume J, Faouzi M, Gmel G. Efficacy of brief motivational intervention at army conscription to address alcohol use and related problems: A randomized controlled trial. *Alcoholism: Clinical and Experimental Research* 2010;**34**:81A.

* Daeppen JB, Bertholet N, Gaume J, Fortini C, Faouzi M, Gmel G. Efficacy of brief motivational intervention in reducing binge drinking in young men: a randomized controlled trial. *Drug and Alcohol Dependence* 2011;**113**(1):69-75.

Daley 1998 *{published data only}*

* Daley DC, Salloum IM, Zuckoff A, Kirisci L, Thase ME. Increasing treatment adherence among outpatients with depression and cocaine dependence: results of a pilot study. *American Journal of Psychiatry* 1998;**155**(11):1611-3.

Davidson 2007 *{published data only}*

* Davidson D, Gulliver SB, Longabaugh R, Wirtz PW, Swift R. Building better cognitive-behavioral therapy: is broad-spectrum treatment more effective than motivational-enhancement therapy for alcohol-dependent patients treated with naltrexone? *Journal of Studies on Alcohol* 2007;**68**(2):238-47.

Davis 2003 *{published data only}*

* Davis TM, Baer JS, Saxon AJ, Kivlahan DR. Brief motivational feedback improves post-incarceration treatment contact among veterans with substance use disorders. *Drug and Alcohol Dependence* 2003;**69**(2):197-203.

Dench 2000 *{published data only}*

* Dench S, Bennett G. The impact of brief motivational intervention at the start of an outpatient day programme for alcohol dependence. *Behavioral and Cognitive Psychotherapy* 2000;**28**:121-30.

Dent 2008 *{published data only}*

* Dent AW, Weiland TJ, Phillips GA, Lee NK. Opportunistic screening and clinician-delivered brief intervention for high-risk alcohol use among emergency department attendees: a randomised controlled trial. *EMA — Emergency Medicine Australasia* 2008;**20**(2):121-8.

Dhital 2015 *{published data only}*

Dhital R, Norman I, Whittlesea C, McCambridge J. Effectiveness of alcohol brief intervention delivered by community pharmacists: study protocol of a two-arm randomised controlled trial. *BMC Public Health* 2013;**13**:152.

* Dhital R, Norman I, Whittlesea C, Murrells T, McCambridge J. The effectiveness of brief alcohol interventions delivered by community pharmacists: randomized controlled trial. *Addiction* 2015;**110**(10):1586-94.

Diaz-Martinez 2011 *{published data only}*

* Diaz-Martinez A, Diaz-Martinez LR, Rodriguez-Machain AC, Diaz-Anzaldua A, Varela HF, Hernandez-Avila CA. Efficacy of a therapeutic intervention program among Mexican college students diagnosed with alcohol dependence. *Eficacia de un programa de intervenciones terapeuticas en estudiantes universitarios diagnosticados con dependencia al alcohol.* 2011;**34**(3):185-94.

Diaz-Martinez LR, Diaz-Martinez A, Rodriguez-Machain AC, Senties R, Luna-Cruz C, Hernandez-Avila CA. An intervention program for Mexican college students diagnosed with alcohol dependence: end of treatment and 6-month follow-up drinking outcomes. *Alcoholism: Clinical and Experimental Research* 2010;**34**(6):171A.

Disney 2005 *{published data only}*

* Disney ER, Kidorf M, Kindbom K, Blucher J, Williams L, Depo J, et al. Opening doors to treatment: a voucher-enhanced motivational intervention for syringe exchange participants. In: 67th Annual Scientific Meeting of the College on Problems of Drug Dependence. Vol. 67. 2005:Cochrane ID: CN-00526102.

Dunn 2004 *{published data only}*

* Dunn C, Droesch RM, Johnston BD, Rivara FP. Motivational interviewing with injured adolescents in the emergency department: in-session predictors of change. *Behavioural and Cognitive Psychotherapy* 2004;**32**(1):113-6.

Easton 2000 *{published data only}*

* Easton C, Swan S, Sinha R. Motivation to change substance use among offenders of domestic violence. *Journal of Substance Abuse Treatment* 2000;**19**(1):1-5.

Edwards 2006 *{published data only}*

* Edwards J, Elkins K, Hinton M, Harrigan SM, Donovan K, Athanasopoulos O, et al. Randomized controlled trial of a cannabis-focused intervention for young people with first-episode psychosis. *Acta Psychiatrica Scandinavica* 2006;**114**:109-17.

Eisenberg 2013 *{published data only}*

Eisenberg K, Woodruff SI. Randomized controlled trial to evaluate screening and brief intervention for drug-using multiethnic emergency and trauma department patients. *Addiction Science & Clinical Practice* 2013;**8**(1):8.

Field 2014 *{published data only}*

Alvarez MJ, Richards DK, Oviedo RS, Field CA. Social network heavy drinking moderates the effects of a brief motivational intervention for alcohol use among injured patients. *Addictive Behaviors* 2021;**112**:106594.

Field C, Von Sternberg K, Jun J, Walters S. Stage of change as a prognostic indicator of drinking outcomes following brief, opportunistic interventions in the medical setting. *Alcoholism: Clinical and Experimental Research* 2014;**38**:209A.

* Field C, Walters S, Marti CN, Jun JN, Foreman M, Brown C. A multisite randomized controlled trial of brief intervention to reduce drinking in the trauma care. *Annals of Surgery* 2014;**259**(5):873-80.

Field CA, Richards DK, Castro Y, Alonso CJ, Wagler A, Sternberg K. The effects of a brief motivational intervention for alcohol use through stages of change among nontreatment seeking injured patients. *Alcoholism: Clinical and Experimental Research* 2020;**44**(11):2361-72.

Richards DK, Pearson MR, Morera OF, Field CA. Protective behavioral strategies predict alcohol-related problems among injured patients following a brief intervention. *Drug and Alcohol Dependence* 2019;**205**:107535.

Floyd 2007 *{published data only}*

* Floyd RL, Sobell M, Velasquez MM, Ingersoll K, Nettleman M, Sobell L, et al. Preventing alcohol-exposed pregnancies. A randomised controlled trial. *American Journal of Preventive Medicine* 2007;**32**(1):1-10.

Gamage 2021 *{published data only}*

Gamage NM, Darker C, Smyth BP. Improvement in psychological wellbeing among adolescents with a substance use disorder attending an outpatient treatment programme. *Irish Journal*

of Psychological Medicine 2021;**38**(1):1-8. [DOI: 10.1017/ipm.2021.6]

Garner 2017 *{published data only}*

Garner BR, Gotham HJ, Tueller SJ, Ball EL, Kaiser D, Stilen P, et al. Testing the effectiveness of a motivational interviewing-based brief intervention for substance use as an adjunct to usual care in community-based AIDS service organizations: study protocol for a multisite randomized controlled trial. *Addiction Science & Clinical Practice* 2017;**12**(1):31.

Gentilello 2001 *{published data only}*

* Gentilello LM. Alcohol interventions in a trauma centre. *Journal fuer Anasthesie und Intensivbehandlung* 2001;**3**:105-7.

Gilder 2017 *{published data only}*

Gilder D, Geisler J, Luna J, Calac D, Moore R, Ehlers C. A randomized trial of motivational interviewing for prevention of underage drinking in American Indian adolescents. *Alcoholism: Clinical and Experimental Research* 2017;**41**:175A.

* Gilder DA, Geisler JR, Luna JA, Calac D, Monti PM, Spillane NS, et al. A pilot randomized trial of Motivational Interviewing compared to Psycho-Education for reducing and preventing underage drinking in American Indian adolescents. *Journal of Substance Abuse Treatment* 2017;**82**:74-81.

Ginsburg 2001 *{published data only}*

* Ginsburg JI. Using motivational interviewing to enhance treatment readiness in offenders with symptoms of alcohol dependence. Dissertation Abstracts International: Section B: The Sciences and Engineering 2001;**61**(8-B):Feb-B.

Goti 2010 *{published data only}*

* Goti J, Diaz R, Serrano L, Gonzalez L, Calvo R, Gual A, et al. Brief intervention in substance-use among adolescent psychiatric patients: a randomised controlled trial. *European Child & Adolescent Psychiatry* 2010;**19**(6):503-11.

Grossbard 2010 *{published data only}*

Grossbard JR, Mastroleo NR, Kilmer JR, Lee CM, Turrisi R, Larimer ME, et al. Substance use patterns among first-year college students: secondary effects of a combined alcohol intervention. *Journal of Substance Abuse Treatment* 2010;**39**(4):384-90.

Grow 2014 *{published data only}*

Grow JC. Effects of a pretreatment brief motivational intervention on treatment engagement in CBT-based and mindfulness-based relapse prevention. *Dissertation Abstracts International: Section B: The Sciences and Engineering* 2014;**75**(2):not specified.

Guan 2015 *{published data only}*

Guan W, Liu T, Baird JR, Merchant RC. Evaluation of a brief intervention to reduce the negative consequences of drug misuse among adult emergency department patients. *Drug and Alcohol Dependence* 2015;**157**:44-53.

Handmaker 1999 *{published data only}*

* Handmaker NS, Miller WR, Manicke M. Findings of a pilot study of motivational interviewing with pregnant drinkers. *Journal of Studies on Alcohol* 1999;**60**(2):285-7.

Hasin 2012 *{published data only}*

* Hasin D, Aharonovich E, Greenstein E, Pavlicova M, Wainberg M, Helzer J, et al. Drinking reduction in HIV primary care: a randomized trial of healthcall, a technology-based enhancement to brief motivational interviewing. *Alcoholism, Clinical and Experimental Research* 2012;**36**:161A.

Hasin DS, Aharonovich E, O'Leary A, Greenstein E, Pavlicova M, Arunajadai S, et al. Reducing heavy drinking in HIV primary care: a randomized trial of brief intervention, with and without technological enhancement. *Addiction* 2013;**108**(7):1230-40.

Haug 2004 *{published data only}*

* Haug NA, Svikis DS, Diclemente C. Motivational enhancement therapy for nicotine dependence in methadone-maintained pregnant women. *Psychology of Addictive Behaviors* 2004;**18**(3):289-92.

Hayes 2007 *{published data only}*

* Hayes BB. Comparing the effectiveness of cognitive-behavioral group therapy with and without motivational interviewing at reducing the social anxiety, alcohol consumption, and negative consequences of socially anxious college students. Dissertation Abstracts International: Section B: The Sciences and Engineering 2007;**67**(9-B):pp-B.

Hickman 1999 *{published data only}*

* Hickman ME. The effects of personal feedback on alcohol intake in dually diagnosed clients: an empirical study of William R. Miller's motivational enhancement therapy. Dissertation Abstracts International: Section B: The Sciences and Engineering 1999;**60**(1-B):Jul-B.

Hicks 1999 *{published data only}*

* Hicks TE. Coping with interpersonal conflict among alcohol abusers in outpatient treatment. Dissertation Abstracts International: Section B: The Sciences and Engineering 1999;**59**(8-B):Feb-B.

Hulse 2003 *{published data only}*

* Hulse GK, Tait RJ. Five-year outcomes of a brief alcohol intervention for adult in-patients with psychiatric disorders. *Addiction* 2003;**98**(8):1061-8.

Hurlocker 2021 *{published data only}*

Hurlocker MC, Moyers TB, Houck J. Can a pure motivational interviewing intervention be manualized and still efficacious? A test of feasibility and initial efficacy. *Psychotherapy* 2021;**58**(2):196-205.

Ingersoll 2013 *{published data only}*

Ingersoll KS, Ceperich SD, Hettema JE, Farrell-Carnahan L, Penberthy JK. Preconceptional motivational interviewing interventions to reduce alcohol-exposed pregnancy risk. *Journal of Substance Abuse Treatment* 2013;**44**(4):407-16.

Juarez 2006 *{published data only}*

* Juarez P, Walters ST, Daugherty M, Radi C. A randomised trial of motivational interviewing and feedback with heavy drinking college students. *Journal of Drug Education* 2006;**36**(3):233-46.

Jungerman 2007 *{published data only}*

* Jungerman FS, Andreoni S, Laranjeira R. Short term impact of same intensity but different duration interventions for cannabis users. *Drug and Alcohol Dependence* 2007;**90**(2-3):120-7.

Kelleher 2021 *{published data only}*

Kelleher KJ, Famelia R, Yilmazer T, Mallory A, Ford J, Chavez LJ, et al. Prevention of opioid use disorder: the HOME (housing, opportunities, motivation and engagement) feasibility study. *Harm Reduction Journal* 2021;**18**(1):112.

Kertesz 2021 *{published data only}*

Kertesz SG. A new approach to treating alcohol use disorder in people experiencing homelessness. *Lancet Psychiatry* 2021;**8**(4):260-1.

Kidorf 2005 *{published data only}*

* Kidorf M, Disney E, King V, Kolodner K, Beilenson P, Brooner RK. Challenges in motivating treatment enrolment in community syringe exchange participants. *Journal of Urban Health* 2005;**82**(3):456-67.

Kidorf 2009 *{published data only}*

* Kidorf M, King VL, Neufeld K, Peirce J, Kolodner K, Brooner RK. Improving substance abuse treatment enrolment in community syringe exchangers. *Addiction* 2009;**104**(5):786-95.

Kinlock 2005 *{published data only}*

* Kinlock TW, Sears EA, O'Grady KE, Callaman JM, Brown BS. The effect of motivational enhancement therapy on drug abuse treatment retention among drug court clients. *Journal of Community Corrections* 2005;**15**:11-7.

Kuchipudi 1990 *{published data only}*

* Kuchipudi V, Hobein K, Flickinger A, Iber FL. Failure of a 2-hour motivational intervention to alter recurrent drinking behavior in alcoholics with gastrointestinal disease. *Journal of Studies on Alcohol* 1990;**51**(4):356-60.

Kulesza 2010 *{published data only}*

Kulesza M, Apperson M, Larimer ME, Copel AL. Brief alcohol intervention for college drinkers: how brief is? *Addictive Behaviors* 2010;**35**(7):730-3.

Kumar 2021 *{published data only}*

Kumar S, Srivastava M, Srivastava M, Yadav JS, Prakash S. Effect of Motivational Enhancement Therapy (MET) on the self efficacy of individuals of alcohol dependence. *Journal of Family Medicine and Primary Care* 2021;**10**(1):367-72.

Larimer 2001 *{published data only}*

* Larimer ME, Turner AP, Anderson BK, Fader JS, Kilmer JR, Palmer RS, et al. Evaluating a brief alcohol intervention with fraternities. *Journal of Studies on Alcohol* 2001;**62**(3):370-80.

Lindstrom 2015 *{published data only}*

Lindstrom Johnson S, Jones V, Cheng TL. Promoting "healthy futures" to reduce risk behaviors in urban youth: a randomized controlled trial. *American Journal of Community Psychology* 2015;**56**(1):36-45.

Longabaugh 2001 *{published data only}*

Baird J, Longabaugh R, Lee CS, Nirenberg TD, Woolard R, Mello MJ, et al. Treatment completion in a brief motivational intervention in the emergency department: the effect of multiple interventions and therapists' behavior. *Alcoholism: Clinical and Experimental Research* 2007;**31**(Suppl. 3):Oct-75S.

* Longabaugh R, Woolard RF, Nirenberg TD, Minugh AP, Becker B, Clifford Pr, et al. Evaluating the effects of a brief motivational intervention for injured drinkers in the emergency department. *Journal of Studies on Alcohol* 2001;**62**:806-16.

Longabaugh 2009 *{published data only}*

* Longabaugh R, Wirtz PW, Gulliver SB, Davidson D. Extended naltrexone and broad spectrum treatment or motivational enhancement therapy. *Psychopharmacology* 2009;**206**(3):367-76.

Lozano 2013 *{published data only}*

Lozano BE, LaRowe SD, Smith JP, Tuerk P, Roitzsch J. Brief motivational feedback may enhance treatment entry in veterans with comorbid substance use and psychiatric disorders. *American Journal on Addictions* 2013;**22**(2):132-5.

L'Engle 2014 *{published data only}*

L'Engle KL, Mwarogo P, Kingola N, Sinkele W, Weiner DH. A randomized controlled trial of a brief intervention to reduce alcohol use among female sex workers in Mombasa, Kenya. *Journal of Acquired Immune Deficiency Syndromes* 2014;**67**(4):446-53.

Magill 2009 *{published data only}*

* Magill M, Barnett NP, Apodaca TR, Rohsenow DJ, Monti PM. The role of marijuana use in brief motivational intervention with young adult drinkers treated in an emergency department. *Journal of Studies on Alcohol and Drugs* 2009;**70**(3):409-13.

Mahmood 2002 *{published data only}*

* Mahmood D, Foote J, Kosanke N, Rosenblum A, Magura S. Group motivational intervention in drug abuse treatment. *Drug and Alcohol Dependence* 2002;**66**:S109-10.

Marlatt 1998 *{published data only}*

* Marlatt GA, Baer JS, Kivlahan DR, Dimeff LA, Larimer ME, Quigley LA, et al. Screening and brief intervention for high-risk college student drinkers: results from a 2-year follow-up assessment. *Journal of Consulting and Clinical Psychology* 1998;**66**(4):604-15.

Martino 2000 *{published data only}*

* Martino S, Carroll KM, O'Malley SS, Rounsaville BJ. Motivational interviewing with psychiatrically ill substance abusing patients. *American Journal on Addictions* 2000;**9**(1):88-91.

Mausbach 2007 *{published data only}*

* Mausbach BT, Semple SJ, Strathdee SA, Zians J, Patterson TL. Efficacy of a behavioral intervention for increasing safer sex behaviours in HIV-negative, heterosexual methamphetamine users: results from the fast-lane study. *Annals of Behavioral Medicine* 2007;**34**(3):263-74.

McCambridge 2004 *{published data only}*

* McCambridge J, Strang J. The efficacy of single-session motivational interviewing in reducing drug consumption and perceptions of drug-related risk and harm among young people: results from a multi-site cluster randomised trial. *Addiction* 2004;**99**(1):39-52.

McCambridge 2011 *{published data only}*

McCambridge J, Hunt C, Jenkins RJ, Strang J. Cluster randomised trial of the effectiveness of motivational interviewing for universal prevention. *Drug and Alcohol Dependence* 2011;**114**(2):177-84.

Mckee 2007 *{published data only}*

* Mckee SA, Carroll KM, Sinha R, Robinson JE, Nich C, Cavallo D, et al. Enhancing brief cognitive-behavioral therapy with motivational enhancement techniques in cocaine users. *Drug and Alcohol Dependence* 2007;**91**(1):97-101.

McNally 2005 *{published data only}*

* McNally AM, Palfai TP, Kahler CW. Motivational interventions for heavy drinking college students: examining the role of discrepancy-related psychological processes. *Psychology of Addictive Behaviors* 2005;**19**(1):79-87.

Meli 2015 *{published data only}*

Meli S, Palfai T, Cheng DM, Alford D, Bernstein J, Samet J, et al. Screening and brief intervention for low risk drug use in primary care: a pilot randomized trial. *Drug and Alcohol Dependence* 2015;**156**:e149-50.

Monahan 2010 *{published data only}*

Monahan CJ, McDevitt-Murphy ME, Murphy JG. Relations between PTSD and response to brief alcohol interventions in college students. *Alcoholism: Clinical and Experimental Research* 2010;**34**(6):292A.

Monti 1999 *{published data only}*

* Monti PM, Colby SM, Barnett NP, Spirito A, Rohsenow DJ, Myers M, et al. Brief intervention for harm reduction with alcohol-positive older adolescents in a hospital emergency department. *Journal of Consulting and Clinical Psychology* 1999;**67**(6):989-94.

Monti 2007 *{published data only}*

* Monti PM, Barnett NP, Colby SM, Gwaltney CJ, Spirito A, Rohsenow DJ, et al. Motivational interviewing versus feedback only in emergency care for young adult problem drinking. *Addiction* 2007;**102**(8):1234-43.

Morgenstern 2007 *{published data only}*

* Morgenstern J, Irwin TW, Wainberg ML, Parsons JT, Muench F, Bux DA Jr, et al. A randomised controlled trial of goal choice interventions for alcohol use disorders among men who have sex with men. *Journal of Consulting and Clinical Psychology* 2007;**75**(1):72-84.

Morgenstern 2010 *{published data only}*

Morgenstern J, Banks HT, Kuerbis A, Sutton K, Rehm K, Hail L. Dynamic systems modeling of ecological momentary assessment data among problem drinkers in treatment. *Alcoholism: Clinical and Experimental Research* 2010;**34**(6):294A.

Morgenstern 2021 *{published data only}*

Morgenstern J, Kuerbis A, Shao S, Padovano HT, Levak S, Vadhan NP, Lynch KG. An efficacy trial of adaptive interventions for alcohol use disorder. *Journal of Substance Abuse Treatment* 2021;**123**:108264.

Morken 2010 *{unpublished data only}*

No reference identified. Motivational interviewing to acutely admitted psychiatric patients with comorbid substance use. clinicaltrials.gov/show/NCT00184223.

Mullins 2004 *{published data only}*

* Mullins SA, Suarez M, Ondersma SJ, Page MC. The impact of motivational interviewing on substance abuse treatment retention: a randomised control trial of women involved with child welfare. *Journal of Substance Abuse Treatment* 2004;**27**(1):51-8.

Murphy 2001 *{published data only}*

* Murphy JG, Duchnick JJ, Vuchinich RE, Davison JW, Karg RS, Olson AM, et al. Relative efficacy of a brief motivational intervention for college student drinkers. *Psychology of Addictive Behaviors* 2001;**15**(4):373-9.

Murphy 2004 *{published data only}*

* Murphy JG, Benson TA, Vuchinich RE, Deskins MM, Eakin D, Flood AM, et al. A comparison of personalized feedback for college students drinkers delivered with and without a motivational interview. *Journal of Studies on Alcohol* 2004;**65**:200-3.

Neff 2013 *{published data only}*

Neff JA, Walters ST, Braitman AL, Kelley ML, Paulson JF, Brickhouse TH, et al. A brief motivational intervention for heavy alcohol use in dental practice settings: rationale and development. *Journal of Health Psychology* 2013;**18**(4):542-53.

Noknoy 2010 *{published data only}*

Noknoy S, Rangsin R, Saengcharnchai P, Tantibhaedhyangkul U, McCambridge J. RCT of effectiveness of motivational enhancement therapy delivered by nurses for hazardous drinkers in primary care units in Thailand. *Alcohol and Alcoholism* 2010;**45**(3):263-70.

Norberg 2014 *{published data only}*

Norberg MM, Hides L, Olivier J, Khawar L, McKetin R, Copel, J. Brief interventions to reduce ecstasy use: a multi-site randomized controlled trial. *Behavior therapy* 2014;**45**(6):745-59.

Nyamathi 2010 *{published data only}*

Nyamathi A, Shoptaw S, Cohen A, Greengold B, Nyamathi K, Marfisee M, et al. Effect of motivational interviewing on reduction of alcohol use. *Drug and Alcohol Dependence* 2010;**107**(1):23-30.

Nyamathi 2011 *{published data only}*

Nyamathi AM, Nandy K, Greengold B, Marfisee M, Khalilifard F, Cohen A, et al. Effectiveness of intervention on improvement of drug use among methadone maintained adults. *Journal of Addictive Diseases* 2011;**30**(1):6-16.

Oliveira 2008 *{published data only}*

* Oliveira MD, Andretta I, Rigoni MD, Szupszynski KP. Motivational Interview with alcoholics: a longitudinal study abstract. *Psicologia-Reflexao e Critica* 2008;**21**(2):261-6.

Osterman 2012 *{published data only}*

Osterman RL, Dyehouse J. Effects of a motivational interviewing intervention to decrease prenatal alcohol use. *Western Journal of Nursing Research* 2012;**34**(4):434-54.

Osterman 2014 *{published data only}*

Osterman RL, Carle AC, Ammerman RT, Gates D. Single-session motivational intervention to decrease alcohol use during pregnancy. *Journal of Substance Abuse Treatment* 2014;**47**(1):10-9.

Owens 2016 *{published data only}*

* Owens M, McCrady BS. A pilot study of a brief motivational intervention for incarcerated drinkers. *Journal of Substance Abuse Treatment* 2016;**68**:1-10.

Owens M. A randomized clinical trial of a brief motivational intervention for incarcerated drinkers. *Dissertation Abstracts International: Section B: The Sciences and Engineering* 2017;**78**(3):Not specified.

Palm 2016 *{published data only}*

Palm A, Olofsson N, Danielsson I, Skalkidou A, Wennberg P, Hogberg U. Motivational interviewing does not affect risk drinking among young women: a randomised, controlled intervention study in Swedish youth health centres. *Scandinavian Journal of Public Health* 2016;**44**(6):611-8.

Parsons 2007 *{published data only}*

* Parsons JT, Golub SA, Rosof E, Holder C. Motivational interviewing and cognitive-behavioral intervention to improve HIV medication adherence among hazardous drinkers: A randomized controlled trial. *Journal of Acquired Immune Deficiency Syndromes* 2007;**46**(4):443-50.

Pedrelli 2020 *{published data only}*

Pedrelli P, Borsari B, Merrill JE, Fisher LB, Nyer M, Shapero BG. Evaluating the combination of a brief motivational intervention plus cognitive behavioral therapy for depression and heavy episodic drinking in college students. *Psychology of Addictive Behaviors* 2020;**34**(2):308-19.

Rendall-Mkosi 2013 *{published data only}*

Rendall-Mkosi K, Morojele N, London L, Moodley S, Singh C, Girdler-Brown B. A randomized controlled trial of motivational interviewing to prevent risk for an alcohol-exposed pregnancy in the Western Cape, South Africa. *Addiction* 2013;**108**(4):725-32.

Reyes-Rodriguez 2020 *{published data only}*

Reyes-Rodriguez MF, Pinto-Gomez JC, Cardozo-Macias F, Perez-Gomez A, Mejia-Trujillo J, Toro-Bermudez J. Evaluation of the prevention program "Brief intervention based on motivational interviewing" in Colombian adolescents. *International Journal of Mental Health and Addiction* 2020;**18**(2):471-81.

Riggs 2015 *{published data only}*

Riggs P. Want change? Try honey instead of vinegar. *Journal of the American Academy of Child & Adolescent Psychiatry* 2015;**54**(6):440-1.

Rubio 2014 *{published data only}*

Rubio DM, Day NL, Conigliaro J, Hanusa BH, Larkby C, McNeil M. Brief motivational enhancement intervention to prevent or reduce postpartum alcohol use: a single-blinded, randomized controlled effectiveness trial. *Journal of Substance Abuse Treatment* 2014;**46**(3):382-9.

Samet 2005 *{published data only}*

* Samet JH, Horton NJ, Meli S, Dukes K, Tripps T, Sullivan L, et al. A randomised controlled trial to enhance antiretroviral therapy adherence in patients with a history of alcohol problems. *Antiviral Therapy* 2005;**10**(1):83-93.

Sanchez-Craig 1996 *{published data only}*

* Sanchez-Craig M, Davila R, Cooper G. A self-help approach for high-risk drinking: effect of an initial assessment. *Journal of Consulting and Clinical Psychology* 1996;**64**(4):694-700.

Saunders 1995 *{published data only}*

* Saunders B, Wilkinson C, Phillips M. The impact of a brief motivational intervention with opiate users attending a methadone programme. *Addiction* 1995;**90**(3):415-24.

Scott 2002 *{published data only}*

* Scott CK, Dennis ML. Preliminary findings from the early re-intervention (ERI) experiment with chronic substance abusers. Drug and Alcohol Dependence 2002;**66**:S161.

Sears 2006 *{published data only}*

* Sears EA, Kinlock TW, O'Grady KE, Callaman JM, Brown BS. The complex issue of treatment readiness in an offender population. In: 68th Annual Scientific Meeting of the College on Problems of Drug Dependence. Vol. Cochrane ID: CN-00591317RC. 2006.

Segatto 2011 *{published data only}*

Segatto ML, Andreoni S, de Souza e Silva R, Diehl A, Pinsky I. Brief motivational interview and educational brochure in emergency room settings for adolescents and young adults with alcohol-related problems: a randomized single-blind clinical trial. *Revista Brasileira de Psiquiatria* 2011;**33**(3):225-33.

Shestopal 2019 *{published data only}*

Shestopal I, Bramness JG. Effect of hypnotherapy in alcohol use disorder compared with motivational interviewing: a randomized controlled trial. *Addictive Disorders & Their Treatment* 2019;**18**(3):169-75. [DOI: https://doi.org/10.1097/ADT.0000000000000170]

Shetty 2011 *{published data only}*

Shepherd S. Motivational intervention integrated into care of facial injury patients may reduce illicit drug use behaviours. *Evidence-based Dentistry* 2012;**13**(3):87-8.

* Shetty V, Murphy DA, Zigler C, Yamashita DD, Belin TR. Randomized controlled trial of personalized motivational interventions in substance using patients with facial injuries. *Journal of Oral and Maxillofacial Surgery* 2011;**69**(9):2396-411.

Sinha 2003 *{published data only}*

* Sinha R, Easton C, Renee-Aubin L, Carroll KM. Engaging young probation-referred marijuana-abusing individuals in treatment: a pilot trial. *American Journal on Addictions* 2003;**12**(4):314-23.

Sinha 2022 *{published data only}*

Sinha K, Kohl A, Ghosh A, Basu D. Efficacy of screening and brief intervention for hazardous alcohol use in patients with mood disorders: a randomized clinical trial from a psychiatric out-patient clinic in India. *Asian Journal of Psychiatry* 2022;**73**:103138. [DOI: 10.1016/j.ajp.2022.103138]

Soderstrom 2007 *{published data only}*

Ryb GE, Dischinger PC, Diclemente C, Auman KM, Kufera JA, Soderstrom CA. Impulsive or depressive personality traits do not impede behavioral change after brief alcohol interventions. *Journal of addictive diseases* 2011;**30**(1):54-62.

* Soderstrom CA, DiClemente CC, Dischinger PC, Hebel JR, Mcduff DR, Auman KM, et al. A controlled trial of brief intervention versus brief advice for at-risk drinking trauma centre patients. *Journal of Trauma* 2007;**62**(5):1102-11.

Sorsdahl 2015 *{published data only}*

Sorsdahl K, Stein DJ, Corrigall J, Cuijpers P, Smits N, Naledi T, et al. The efficacy of a blended motivational interviewing and problem solving therapy intervention to reduce substance use among patients presenting for emergency services in south africa: a randomized controlled trial. *Substance Abuse Treatment, Prevention, and Policy* 2015;**10**:46.

Staton 2018 *{published data only}*

Staton M, Strickl, JC, Webster JM, Leukefeld C, Oser C, Pike E. HIV prevention in rural appalachian jails: implications for re-entry risk reduction among women who use drugs. *AIDS and Behavior* 2018;**22**(12):4009-18.

Staton-Tindall 2015 *{published data only}*

Staton-Tindall M, Webster M, Leukefeld C, Havens JR, Oser CB. Women's intervention to stop HIV/HCV (WISH). *Drug and Alcohol Dependence* 2015;**156**:e211.

Stein 2006 *{published data only}*

* Stein LA, Colby SM, Barnett NP, Monti PM, Golembeske C, Lebeau-Craven R. Effects of motivational interviewing for incarcerated adolescents on driving under the influence after release. *American Journal on Addictions* 2006;**15 Suppl 1**:50-7.

Stein LAR, Colby SM, Barnett NP, Monti PM, Golembeske C, Lebeau-Craven R, et al. Enhancing substance abuse treatment engagement in incarcerated adolescents. *Psychological Services* 2006;**3**(1):25-34.

Stein 2006a *{published data only}*

* Stein MD, Weinstock MC, Herman DS, Anderson BJ, Anthony JL, Niaura R. A smoking cessation intervention for the methadone-maintained. *Addiction* 2006;**101**(4):599-607.

Stein 2011 *{published data only}*

Clair M, Stein LA, Soenksen S, Martin RA, Lebeau R, Golembeske C. Ethnicity as a moderator of motivational interviewing for incarcerated adolescents after release. *Journal of Substance Abuse Treatment* 2013;**45**(4):370-5.

Stein LA, Clair M, Lebeau R, Colby SM, Barnett NP, Golembeske C, et al. Motivational interviewing to reduce substance-related consequences: effects for incarcerated adolescents with depressed mood. *Drug and Alcohol Dependence* 2011;**118**(2):475-8.

* Stein LA, Lebeau R, Colby SM, Barnett NP, Golembeske C, Monti PM. Motivational interviewing for incarcerated adolescents: effects of depressive symptoms on reducing alcohol and marijuana use after release. *Journal of Studies on Alcohol and Drugs* 2011;**72**(3):497GCo506.

Stephens 2000 *{published data only}*

* Stephens RS, Roffman RA, Curtin L. Comparison of extended versus brief treatments for marijuana use. *Journal of Consulting & Clinical Psychology* 2000;**68**(5):898-908.

Stewart 2016 *{published data only}*

Stewart DG, Siebert EC, Arlt VK, Moise-Campbell C, Lehinger E. READY or not: findings from a school-based MI intervention for adolescent substance use. *Journal of Substance Abuse Treatment* 2016;**71**:23-9.

Stuart 2013 *{published data only}*

Stuart GL, Shorey RC, Moore TM, Ramsey SE, Kahler CW, O'Farrell TJ, et al. Randomized clinical trial examining the incremental efficacy of a 90-minute motivational alcohol intervention as an adjunct to standard batterer intervention for men. *Addiction* 2013;**108**(8):1376-84.

Swanson 1999 *{published data only}*

* Swanson AJ, Pantalon MV, Cohen KR. Motivational interviewing and treatment adherence among psychiatric and dually diagnosed patients. *Journal of Nervous and Mental Disease* 1999;**187**(10):630-5.

Tapert 2003 *{published data only}*

* Tapert SF, Colby SM, Barnett NP, Spirito A, Rohsenow DJ, Myers MG, et al. Depressed mood, gender, and problem drinking

in youth. *Journal of Child and Adolescent Substance Abuse* 2003;**12**(4):55-68.

Teeters 2015 *{published data only}*

Teeters JB, Borsari B, Martens MP, Murphy JG. Brief motivational interventions are associated with reductions in alcohol-impaired driving among college drinkers. *Journal of studies on alcohol and drugs* 2015;**76**(5):700-9.

Terlecki 2010 *{published data only}*

Terlecki M. The long-term effect of a brief moivational alcohol intervention for heavy drinking mandated college students. https://digitalcommons.lsu.edu/gradschool_dissertations/1619?utm_source=digitalcommons.lsu.edu%2Fgradschool_dissertations%2F1619&utm_medium=PDF&utm_campaign=PDFCoverPages 2010.

* Terlecki MA, Larimer ME, Copel, AL. Clinical outcomes of a brief motivational intervention for heavy drinking mandated college students: a pilot study. *Journal of Studies on Alcohol and Drugs* 2010;**71**(1):54-60.

Terlecki 2021 *{published data only}*

Terlecki MA, Buckner JD, Copeland AL. Protective behavioral strategies underutilization mediates effect of a brief motivational intervention among socially anxious undergraduate drinkers. *Psychology of Addictive Behaviors* 2021;**35**(1):73-84.

Thush 2007 *{published data only}*

* Thush C, Wiers RW, Theunissen N, Van den Bosch J, Opdenacker J, van Empelen P, et al. A randomised clinical trial of a targeted intervention to moderate alcohol use and alcohol-related problems in at-risk adolescents. *Pharmacology, Biochemistry, and Behavior* 2007;**86**(2):368-76.

Tweedly 2012 *{published data only}*

Ponsford J, Tweedly L, Lee N, Taffe J. Who responds better? Factors influencing a positive response to brief alcohol interventions for individuals with traumatic brain injury. *Journal of head trauma rehabilitation* 2012;**27**(5):342-48.

* Tweedly L, Ponsford J, Lee N. Investigation of the effectiveness of brief interventions to reduce alcohol consumption following traumatic brain injury. *Journal of Head Trauma Rehabilitation* 2012;**27**(5):331-41.

Utter 2014 *{published data only}*

Utter GH, Young JB, Theard LA, Cropp DM, Mohar CJ, Eisenberg D, et al. The effect on problematic drinking behavior of a brief motivational interview shortly after a first arrest for driving under the influence of alcohol: a randomized trial. *Journal of Trauma and Acute Care Surgery* 2014;**76**(3):661-70.

Vanderburg 2003 *{published data only}*

* Vanderburg SA. Motivational interviewing as a precursor to a substance abuse program for offenders. Dissertation Abstracts International: Section B: the Sciences and Engineering 2003;**63**(9-B):4354.

Vederhus 2014 *{published data only}*

Vederhus JK, Timko C, Kristensen O, Hjemdahl B, Clausen T. Motivational intervention to enhance post-detoxification 12-Step group affiliation: a randomized controlled trial. *Addiction* 2014;**109**(5):766-73.

Villegas 2016 *{published data only}*

Villegas DL. Predictors of change in college freshmen and sophomore cognitions of alcohol expectancies. *Dissertation Abstracts International: Section B: The Sciences and Engineering* 2016;**77**(4):Not specified.

Wain 2006 *{published data only}*

* Wain M, Wilbourne PL, Harris K, Teleki J, Burling T, Lovett S. Brief motivational interview improves treatment adherence in homeless men with severe drug and alcohol dependence. *Alcoholism-Clinical and Experimental Research* 2006;**30**(6):99A.

Walters 2010 *{published data only}*

Walters ST, Vader AM, Nguyen N, Harris TR, Eells J. Motivational interviewing as a supervision strategy in probation: a randomized effectiveness trial. *Journal of Offender Rehabilitation* 2010;**49**(5):309-23.

Wandera 2017 *{published data only}*

Wandera B, Tumwesigye NM, Nankabirwa JI, Mafigiri DK, Parkes-Ratanshi RM, Kapiga S, et al. Efficacy of a single, brief alcohol reduction intervention among men and women living with HIV/AIDS and using alcohol in Kampala, Uganda: a randomized trial. *Journal of the International Association of Providers of AIDS Care* 2017;**16**(3):276-85.

Ward 2015 *{published data only}*

Ward CL, Mertens JR, Bresick GF, Little F, Weisner CM. Screening and brief intervention for substance misuse: does it reduce aggression and HIV-related risk behaviours? *Alcohol and Alcoholism* 2015;**50**(3):302-9.

Wertz 1994 *{published data only}*

* Wertz JS. The effect of motivational interviewing on treatment participation, self-efficacy, and alcohol use at follow-up in inpatient alcohol dependent adults. Dissertation Abstracts International: Section B: The Sciences and Engineering 1994;**55**(1-B):pp-B.

Whitten 2006 *{published data only}*

* Whitten L. Checkup System Catches Relapse Early and Facilitates Return to Treatment. In: NIDA Notes. Vol. 20. 2006:1-3.

Wilson 2012a *{published data only}*

Wilson GB, McGovern R, Antony G, Cassidy P, Deverill M, Graybill E, et al. Brief intervention to reduce risky drinking in pregnancy: study protocol for a randomized controlled trial. *Trials* 2012;**13**:174.

Wood 2010 *{published data only}*

Wood MD, Fairlie AM, Fernandez AC, Borsari B, Capone C, et al. Brief motivational and parent interventions for college students: a randomized factorial study. *Journal of Consulting and Clinical Psychology* 2010;**78**(3):349-61.

Woodall 2007 *{published data only}*

* Woodall WG, Delaney HD, Kunitz SJ, Westerberg VS, Zhao H. A randomised trial of a DWI intervention program for first offenders: intervention outcomes and interactions with antisocial personality disorder among a primarily American-Indian sample. *Alcoholism, Clinical and Experimental Research* 2007;**31**(6):974-87.

Woolard 2013 *{published data only}*

Woolard R, Baird J, Longabaugh R, Nirenberg T, Lee CS, Mello MJ, et al. Project Reduce: reducing alcohol and marijuana misuse: Effects of a brief intervention in the emergency department. *Addictive Behaviors* 2013;**38**(3):1732-9.

Zahradnik 2009 *{published data only}*

* Zahradnik A, Otto C, Crackau B, Löhrmann I, Bischof G, John U, et al. Randomized controlled trial of a brief intervention for problematic prescription drug use in non-treatment-seeking patients. *Addiction* 2009;**104**(1):109-17.

Zhang 2018 *{published data only}*

Zhang J, Slesnick N. Substance use and social stability of homeless youth: a comparison of three interventions. *Psychology of Addictive Behaviors* 2018;**32**(8):873-84.

Zule 2009 *{published data only}*

* Zule WA, Costenbader EC, Coomes CM, Wechsberg WM. Effects of a hepatitis C virus educational intervention or a motivational intervention on alcohol use, injection drug use, and sexual risk behaviors among injection drug users. *American Journal of Public Health* 2009;**99 Suppl 1**:S180-6.

References to studies awaiting assessment

ACTRN12611000135910 *{published data only}*

ACTRN12611000135910. Screening and treatment for alcohol related trauma using brief interventions (START Brief Interventions) project. anzctr.org.au/ACTRN12611000135910.aspx (first received 4 February 2011).

Blow 2012 *{published data only}*

Blow FC, Barry KL, Chermack ST, Walton MA. Screening and brief intervention for at-risk drinking in older adults: mental and physical health outcomes. *Alcoholism: Clinical and Experimental Research* 2012;**36**:24A.

Corno 2011 *{published data only}*

Corno CM, Colby SM, Barnett N. Correlates of motivation and self-efficacy to change drinking behavior in non-college bound young adults. *Alcoholism: Clinical and Experimental Research* 2011;**35**:161A.

Dash 2021 *{published data only}*

Dash GF, Chung T, Yang M, Bryan AD, Hudson KA, Feldstein Ewing SW. Impact of adolescent: provider connectedness on problem drinking outcomes following brief behavioral interventions. *Alcoholism: Clinical and Experimental Research* 2021;**45**:252A.

Dubertret 2010 *{unpublished data only}*

Gaume 2020 *{published data only}*

Gaume J, Magill M, Bertholet N, McCambridge J, Hugli O, Daeppen JB. Brief motivational intervention for alcohol-intoxicated young adults admitted to the emergency department: short-term effects and moderation analyses. *Alcoholism: Clinical and Experimental Research* 2020;**44**:156A.

Gonzales 2019 *{published data only}*

Gonzales Vigilar MV, Aranha A, Cockern N, Secord E, Rosenberg DR. Study of cannabis use disorder among adolescents and young adults in an ambulatory HIV clinic setting. *Journal of the American Academy of Child and Adolescent Psychiatry* 2019;**58**(10):S172.

Hides 2018 *{published data only}*

Hides L, Kavanagh D, Daglish M, Connor J, Cotton S. Does targeted coping skills training enhance the efficacy of motivational interviewing (MI) among young people with alcohol related-injuries accessing emergency department and crisis support care? *European Psychiatry* 2018;**48**:S156.

Horner 2010 *{published data only}*

Horner KJ. Brief motivational interviewing: an intervention for alcohol abusing college students. State University of New York at Albany ProQuest Dissertations Publishing 2010;**3402364**.

Hospital 2012 *{published data only}*

Hospital MM, Graziano JN, Morris SL, Wagner EF. Examining the effectiveness of a school-based motivational interviewing alcohol intervention with minority adolescents. *Alcoholism: Clinical and Experimental Research* 2012;**36**:243A.

Ingesson 2022 *{published data only}*

Ingesson S, Jayaram-Lindstrom N, Andreasson S, Wallhed Finn S, Hammarberg A. Behavioral self-control training versus Motivational Enhancement Therapy for individuals with alcohol use disorder who aim for controlled drinking: a randomized control. *Alcoholism: Clinical and Experimental Research* 2022;**46**:227A.

IRCT20140907019077N4 *{published data only}*

IRCT20140907019077N4. Effect of motivational interviewing-based behavior change model on returning to opium addiction among women of reproductive age. en.irct.ir/trial/17156 (first registered 12 December 2017).

Jaiswal 2018 *{published data only}*

Jaiswal R, Gupta S. Evaluating motivational enhancement therapy versus life skill training along with pharmacotherapy in management of opioid use disorder. *Indian Journal of Psychiatry. Conference: 70th Annual National Conference of the Indian Psychiatric Society, ANCIPS 2018. India* 2018;**60**(5):S155-6.

Lakshmana 2016 *{published data only}*

Lakshmana G. Efficacy of combination of motivational interviewing and cognitive behavior intervention with substance abuse street adolescents in India: a randomized

control study. *Journal of Social Work Practice in the Addictions* 2016;**16**(4):337-57.

Lauckner 2021 *{published data only}*

Lauckner C, Walthers J, Bryant K, Edelman EJ, Fiellin DA, Hansen N, et al. Effects of participant alcohol use on brief alcohol intervention conversational processes. *Journal of Addiction Medicine* 2021;**15**(5):E18-9.

Lee 2015 *{published data only}*

Lee CS, Tavares TL. Addressing the effects of social stressors on drinking behavior in a randomized controlled trial of motivational interviewing with Hispanics. *Alcoholism: Clinical and Experimental Research* 2015;**39**:262A.

Lopes 2018 *{published data only}*

Lopes A. The impact of the motivational interview on the behaviors and conditions of individuals with disorders for the use of psychotropic substances - a randomized clinical trial. No source identified 2018.

Lunny 2012 *{published data only}*

Lunny KF, Bacio GA, Webb JN, Heydari A, Guzman IY, Ray LA. Single session of motivational interviewing for non-treatment seeking alcohol dependent patients: an open label trial. *Alcoholism: Clinical and Experimental Research* 2012;**36**:162A.

Lygidakis 2013 *{published data only}*

Lygidakis C, Struzzo P, Scafato E, McGregor R, Vedova RD, Verbano L, et al. Risky drinkers in primary care: effectiveness of facilitated access to an alcohol reduction website. *European Journal of General Practice* 2013;**19**(1):50.

Martens 2011 *{published data only}*

Martens MP, Smith AE, Murphy JG. A randomized controlled trial examining the comparative efficacy of single-component brief alcohol interventions for at-risk college drinkers. *Alcoholism: Clinical and Experimental Research* 2011;**35**:298A.

Mastroleo 2010a *{published data only}*

Mastroleo NR, Magill M. Student defensiveness and motivational readiness as moderators of drinking outcome in a brief peer-delivered intervention. *Alcoholism: Clinical and Experimental Research* 2010;**34**(6):60A.

Mastroleo 2022 *{published data only}*

Mastroleo N, Possemato K, Balderrama-Durbin C, King P, Rauch SA. Initial testing of a brief, integrated intervention aimed at reducing heavy alcohol use and PTSD among military veterans in primary care. *Alcoholism: Clinical and Experimental Research* 2022;**46**:67A.

NCT00229983 *{published data only}*

NCT00229983. Medical office intervention for adolescent drug use. clinicaltrials.gov/ct2/show/NCT00229983 (first received 29 September 2005).

NCT01143792 *{published data only}*

NCT01143792. Evaluation of treatments for homeless youths [Evaluation of treatments for homeless youths: CRA, MET and Case Management]. clinicaltrials.gov/show/NCT01143792 (first received 11 June 2010).

NCT01616212 *{published data only}*

NCT01616212. Early Intervention for Minors in Possession of Alcohol/Drugs: A Feasibility Study (MAST1). clinicaltrials.gov/ct2/show/NCT01616212 (first received 29 May 2012).

NCT01621334 *{published data only}*

NCT01621334. The men's domestic abuse check-up engages adult men concerned about their abusive behavior and alcohol or drug use [Stage 1B Study Motivating Substance Abusing Batterers to Seek Treatment]. clinicaltrials.gov/ct2/show/NCT01621334 (first received 18 June 2012).

NCT02159391 *{published data only}*

NCT02159391. The efficacy of brief motivational interviewing for trauma patients related to alcohol or other abuse drugs (MOTIVA). clinicaltrials.gov/ct2/show/NCT02159391 (first received 6 June 2014).

NCT02409888 *{published data only}*

NCT02409888. Evaluating interventions for alcohol use disorder. clinicaltrials.gov/ct2/show/study/NCT02409888 (first received 1 April 2015).

NTR2420 *{published data only}*

NTR2420. Effect of a short motivation enhancing intervention for judicial supervised criminal addicts on entering addiction treatment and treatment drop out. www.onderzoekmetmensen.nl/en/trial/24218 (first received 21 July 2010).

NTR2710 *{published data only}*

NTR2710. Effectiveness of the "Wiet-Check", the Dutch version of the Adolescent Cannabis Check-Up (ACCU), amongst adolescents aged 14-21 years with frequent cannabis use. www.onderzoekmetmensen.nl/en/trial/27383 (first received 25 January 2011).

NTR3182 *{published data only}*

NTR3182. Study of Integrated Dual Diagnosis Treatment in the Netherlands. www.onderzoekmetmensen.nl/en/trial/23336 (first posted 7 December 2011).

NTR3730 *{published data only}*

NTR3730. A study to assess whether the intervention Moti-4 is effective in influencing adolescents cannabis use. www.onderzoekmetmensen.nl/en/trial/20952 (first received 29 November 2012).

Parry 2019 *{published data only}*

Parry C, Shuper P, Londani BM, Myers B, Nkosi S, Morojele N. Drinking among patients on antiretroviral therapy in South Africa: Gender differences and outcomes of a clinical trial. *Alcoholism: Clinical and Experimental Research* 2019;**43**:266A.

Puentes 2016 *{published data only}*

Puentes RP, Rangel LM, Field CA. A latent growth curve analysis: Approximating spill-over effects of an alcohol-focused brief

intervention on marijuana use. *Alcoholism: Clinical and Experimental Research* 2016;**40**:69A.

Pujam 2022 *{published data only}*

Pujam SN. A clinical trial to study the effects of mindfulness on relapsing factors like craving and emotion regulation in patients with alcohol dependence syndrome. No source identified 2022.

Rinker 2017 *{published data only}*

Rinker DV, Young CM, Neighbors C. A randomized controlled trial of injunctive norms feedback with and with out motivational interviewing. *Alcoholism: Clinical and Experimental Research* 2017;**41**:252A.

Rose 2013 *{published data only}*

Rose SJ, Lebel T, Begun A. Perceptions of barriers to care expressed by incarcerated mothers. *Alcoholism: Clinical and Experimental Research* 2013;**37**:294A.

Sander 2012 *{published data only}*

Sander AM. A randomized, dual-center controlled trial of brief intervention for problem alcohol abuse in persons with traumatic brain injury. *Archives of Physical Medicine and Rehabilitation* 2012;**93**(10):E7.

Sawant 2016 *{published data only}*

Sawant M, Hospital M, Wagner E. Motivational interviewing with at risk American Indian teens: results from a randomized clinical trial. *Alcoholism: Clinical and Experimental Research* 2016;**40**:266A.

Tate 2010 *{published data only}*

Tate SR, Mrnak-Meyer J, Tripp JC, Brown SA. Brief health focused motivational intervention for alcohol dependent veterans. *Alcoholism: Clinical and Experimental Research* 2010;**34**(6):230A.

Whiteside 2011 *{published data only}*

Whiteside U. A brief personalized feedback intervention integrating a motivational interviewing therapeutic style and dialectical behavioral therapy skills for depressed or anxious heavy drinking young adults. *Dissertation Abstracts International: Section B: The Sciences and Engineering* 2011;**71**(12):7745.

References to ongoing studies

CTRI/2019/08/020530 *{published data only}*

CTRI/2019/08/020530. Effect of a brief motivational intervention in reducing alcohol consumption in the emergency department [Effect of a brief motivational interventions in reducing alcohol consumption among young patients visiting emergency department: a randomized controlled trial]. www.ctri.nic.in/Clinicaltrials/pmaindet2.php?trialid=35795 (first receveived 2 August 2019).

CTRI/2022/06/043527 *{published data only}*

CTRI/2022/06/043527. Usefulness of screening and brief intervention in patient with alcohol use disorder who are on opioid agonist treatment [Efficacy of screening and brief Intervention for hazardous and harmful alcohol use among patients on opioid agonist treatment (OAT): a randomized controlled trial]. www.ctri.nic.in/Clinicaltrials/pmaindet2.php?trialid=67862 (first received 27 June 2022).

IRCT20151103024866N13 *{published data only}*

IRCT20151103024866N13. Investigating the effect of motivational enhancement therapy on the pattern of drug use [The effect of motivational-enhancement therapy (MET) on the pattern of postpartum drug use in addicted women referring to Afzali Pour kerman hospital in 2018]. en.irct.ir/trial/30172 (first received 4 January 2019).

KCT0004748 *{published data only}*

KCT0004748. Effect of early intervention based on motivational interviewing for high risk drinker: a randomized controlled trial [Development of early intervention system for reducing high-risk drinking]. cris.nih.go.kr/cris/en/search/search_result_st01.jsp?seq=15843 (first received 19 February 2020).

NCT04147520 *{published data only}*

NCT04147520. Reducing hazardous alcohol use in social networks using targeted intervention: 21 rising. clinicaltrials.gov/ct2/show/record/NCT04147520 (first received 23 October 2019).

NCT04345302 *{published data only}*

* NCT04345302. Brief motivational therapy versus usual care for alcohol use disorders in primary care [Brief motivational therapy versus enhanced usual care for alcohol use disorder in primary care in chile, an exploratory randomised trial]. ClinicalTrials.gov/show/NCT04345302 (first received 8 April 2020).

NCT04822168 *{published data only}*

NCT04822168. Effects of remote motivational enhancement & MySafeRx on post-detox engagement in B/N Treatment - RCT [Effects of remote motivational enhancement & MySafeRx on post-detox engagement and retention in B/N treatment (MySafeRx) - RCT]. clinicaltrials.gov/ct2/show/NCT04822168 (first received 27 February 2018).

NCT04881500 *{published data only}*

NCT04881500. Impact of a brief motivational intervention including counter-marketing arguments with a population of patients with moderate to severe alcohol use disorders who are followed up on an outpatient basis. www.clinicaltrials.gov/ct2/show/NCT04881500 (first received 3 May 2021).

NCT04998045 *{published data only}*

NCT04998045. Feasibility and acceptability of a substance use screening and brief intervention for youth living with HIV in Kenya. clinicaltrials.gov/ct2/show/NCT04998045 (first received 26 June 2021).

NCT05010187 *{published data only}*

NCT05010187. Preventing alcohol misuse and consequences in vulnerable women. clinicaltrials.gov/ct2/show/NCT05010187 (first received 20 July 2021).

NCT05489068 *{published data only}*

NCT05489068. Motivational interviewing at intake vs intake as usual on client engagement in addiction treatment. clinicaltrials.gov/show/NCT05489068 (first received 26 July 2022).

Additional references

Andréasson 2003

Andreasson S, Ojehagen A. Psychosocial treatment for alcohol dependence. In: Berglund M, Thelander S, Jonsson E, editors(s). Treating Alcohol and Drug Abuse: An Evidence Based Review. Weinheim: Wiley-VCH, 2003:43-188.

APA 1987

American Psychiatric Association (APA). Diagnostic and Statistical Manual of Mental Disorders. 3rd edition, revised. Washington, DC: American Psychiatric Association, 1987.

APA 1994

American Psychiatric Association (APA). Diagnostic and Statistical Manual of Mental Disorders. 4th edition. Washington, DC: American Psychiatric Association, 1994.

APA 2013

American Psychiatric Association (APA). DSM-5 Task Force. American Psychiatric Publishing, Inc., 2013.

Berman 2005

Berman AH, Bergman H, Palmstierna T, Schlyter F. Evaluation of the Drug Use Disorders Identification Test (DUDIT) in criminal justice and detoxification settings and in a Swedish population sample. *European Addiction Research* 2005;**11**:22–31.

Björk 2014

Björk A. Stabilizing a fluid intervention: the development of Motivational Interviewing, 1983–2013. *Addiction Research Theory* 2014;**22**(4):313-24.

Borenstein 2005

Borenstein M, Hedges LV, Higgins JPT, Rothstein HR. Comprehensive Meta-Analysis Version 2. Englewood, NJ: BioStat, 2005.

Borenstein 2021

Borenstein M, Hedges LV, Higgins JPT, Rothstein HR. Introduction to Meta-Analysis. Second edition. John Wiley & Sons LTD, 2021.

Burke 2003

Burke BL, Arkowitz H, Mendola M. The efficacy of motivational interviewing: a meta-analysis of controlled clinical trials. *Journal of Consulting and Clinical Psychology* 2003;**71**(5):843-61.

Burke 2004

Burke BL, Dunn CW, Atkins DC, Phelps JS. The emerging evidence base for motivational interviewing: a meta-analytic and qualitative inquiry. *Journal of Cognitive Psychotherapy: An International Quarterly* 2004;**18**:309-22.

Carey 2007

Carey KB, Scott-Sheldon LA, Carey MP, DeMartini KS. Individual-level interventions to reduce college student drinking: a meta-analytic review. *Addictive Behaviors* 2007;**32**(11):2469-94.

Cockerham 2021

Cockerham WC. The Social Causes of Health and Disease. John Wiley & Sons, 2021.

Copeland 2015

Copeland L, McNamara R, Kelson M, Simpson S. Mechanisms of change within motivational interviewing in relation to health behaviors outcomes: a systematic review. *Patient Education and Counseling* 2015;**98**:401-11.

Covidence 2022 [Computer program]

Covidence. Version accessed prior to 01 November 2023. Melbourne, Australia: Veritas Health Innovation. Available at covidence.org.

Cowlishaw 2012

Cowlishaw S, Merkouris S, Dowling N, Anderson C, Jackson A, Thomas S. Psychological therapies for pathological and problem gambling. *Cochrane Database of Systematic Reviews* 2012;**11**:Art. No.: CD008937. [DOI: 10.1002/14651858.CD008937.pub2]

Darke 1991

Darke S, Ward J, Hall W, Heather N, Wodak A. The Opiate Treatment Index (OTI) Researcher's Manual. Vol. **NDARC Technical Report No II**. Sydney: National Drug and Alcohol Research Centre, 1991.

Darke 1992

Darke S, Hall W, Wodak A, Heather N, Ward J. Development and validation of a multi-dimensional instrument for assessing outcome of treatment among opiate users: the Opiate Treatment Index. *British Journal of Addiction* 1992;**87**:733-42.

de Wildt 2002

de Wildt WA, Schippers GM, van den Brink W, Potgieter AS, Deckers F, Bets D. Does psychosocial treatment enhance the efficacy of Acamprosate in patients with alcohol problems? *Alcohol and Alcoholism* 2002;**37**(4):375-82.

Degenhardt 2018

Degenhardt L, Charlson F, Ferrari A, Santomauro D, Erskine H, Mantilla-Herrara A. The global burden of disease attributable to alcohol and drug use in 195 countries and territories, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet Psychiatry* 2018;**5**(12):987-1012.

Dunn 2001

Dunn C, Deroo L, Rivara FP. The use of brief interventions adapted from motivational interviewing across behavioral domains: a systematic review. *Addiction* 2001;**96**(12):1725-42.

Emmelkamp 2006

Emmelkamp PM, Vedel E. Evidence-based treatment of alcohol and drug abuse. New York: Routledge/Taylor & Francis, 2006.

Foxcroft 2016

Foxcroft DR, Coombes L, Wood S, Allen D, Almeida Santimano NML, Moreira MT. Motivational interviewing for the prevention of alcohol misuse in young adults. *Cochrane Database of Systematic Reviews* 2016, Issue 7. Art. No: CD007025. [DOI: 10.1002/14651858.CD007025.pub4]

Frey 2021

Frey AJ, Lee J, Small JW, Sibley M, Owens JS, Skidmore B, et al. Mechanisms of motivational interviewing: a conceptual framework to guide practice and research. *Prevention Science* 2021;**22**(6):689-700.

Frost 2018

Frost H, Campbell P, Maxwell M, O'Carroll RE, Dombrowski SU, Williams B et al. Effectiveness of Motivational Interviewing on adult behaviour change in health and social care settings: A systematic review of reviews. *PLoS One* 2018;**13**:e0204890.

Gates 2016

Gates PJ, Sabioni P, Copeland J, Le Foll B, Gowing L. Psychosocial interventions for cannabis use disorder. *Cochrane Database of Systematic Reviews* 2016, Issue 5. Art. No: CD005336. [DOI: 10.1002/14651858.CD005336.pub4]

Grenard 2006

Grenard JL, Ames SL, Pentz MA, Sussman S. Motivational interviewing with adolescents and young adults for drug-related problems. *International Journal of Adolescent Medicine and Health* 2006;**18**(1):53-67.

Heather 1993

Heather N, Rollnick S. Readiness to Change Questionnaire: User's Manual (Revised Edition). Vol. **NDARC Technical Report No. 19**. Sydney: National Drug and Alcohol Research Centre, 1993.

Hettema 2005

Hettema J, Steele J, Miller WR. Motivational interviewing. *Annual Review of Clinical Psychology* 2005;**1**(1548-5943 (Print)):91-111.

Higgins 2017

Higgins JP, Green S (editors). *Cochrane Handbook for Systematic Reviews of Interventions* Version 5.2.0 (updated March 2017). Available from handbook.cochrane.org 2017.

Higgins 2023

Higgins JP, Eldridge S, Li T (editors). Chapter 23: Including variants on randomized trials. In: Higgins JP, Thomas J, Chandler J, Cumpston M, Li T, Page MJ, Welch VA (editors). *Cochrane Handbook for Systematic Reviews of Interventions* version 6.4 (updated August 2023). Cochrane, 2023. Available from www.training.cochrane.org/handbook.

Hrobjartsson 2014

Hrobjartsson A, Emanuelsson F, Skou Thomsen AS, Hilden J, Brorson S. Bias due to lack of patient blinding in clinical trials. A systematic review of trials randomizing patients to blind and nonblind sub-studies. *International Journal of Epidemiology* 2014;**43**(4):1272-83.

Hurlocker 2020

Hurlocker MC, Madson MB, Schumacher JA. Motivational interviewing quality assurance: a systematic review of assessment tools across research contexts. *Clinical Psychology Review* 2020;**82**:101909.

Klimas 2018

Klimas J, Fairgrieve C, Tobin H, Field CA, O'Gorman CSM, Glynn LG. Psychosocial interventions to reduce alcohol consumption in concurrent problem alcohol and illicit drug users. *Cochrane Database of Systematic Reviews* 2018, Issue 12. Art. No: CD009269. [DOI: 10.1002/14651858.CD009269.pub4]

Larimer 2007

Larimer ME, Cronce JM. Identification, prevention, and treatment revisited: individual-focused college drinking prevention strategies 1999-2006. *Addictive Behaviors* 2007;**32**(11):2439-68.

Lindson 2019

Lindson N, Thompson TP, Ferrey A, Lambert JD, Aveyard P. Motivational interviewing for smoking cessation. *Cochrane Database of Systematic Reviews* 2019, Issue 7. Art. No: CD013183. [DOI: 10.1002/14651858.CD013183.pub2]

Lundahl 2010

Lundahl BW, Kunz C, Brownell C, Tollefson D, Burke BL. A meta-analysis of motivational interviewing: twenty-five years of empirical studies. *Research on Social Work Practice* 2010;**20**(2):137-60.

Lundahl 2013

Lundahl B, Moleni T, Burke BL, Butters R, Tollefson D, Butler C, et al. Motivational interviewing in medical care settings: a systematic review and meta-analysis of randomized controlled trials. *Patient Education and Counseling* 2013;**93**(2):157-68.

Macdonald 2012

Macdonald P, Hibbs R, Corfield F, Treasure J. The use of motivational interviewing in eating disorders: a systematic review. *Psychiatry Research* 2012;**200**(1):1-11.

Magill 2014

Magill M, Gaume J, Apodaca TR, Walthers J, Mastroleo NR, Borsari B, et al. The technical hypothesis of motivational interviewing: a meta-analysis of MI's key causal model. *Journal of Consulting and Clinical Psychology* 2014;**82**:973-83.

Magill 2018

Magill M, Apodaca TR, Borsari B, Gaume J, Hoadley A, Gordon RE, et al. A meta-analysis of motivational interviewing process: technical, relational, and conditional process models of change. *Journal of Consulting and Clinical Psychology* 2018;**86**(2):140-57.

Magill 2019

Magill M, Hallgren KA. Mechanisms of behavior change in motivational interviewing: do we understand how MI works? *Current Opinion in Psychology* 2019;**30**:1-5.

Mbuagbaw 2012

Mbuagbaw L, Ye C, Thabane L. Motivational interviewing for improving outcomes in youth living with HIV. *Cochrane Database of Systematic Reviews* 2012, Issue 9. Art. No: CD009748. [DOI: 10.1002/14651858.CD009748.pub2]

Miller 1983

Miller WR. Motivational Interviewing with problem drinkers. Behavioural Psychotherapy 1983;**11**(2):147-172.

Miller 1991

Miller WR, Rollnick S. Motivational interviewing: preparing people to change addictive behavior. New York: Guilford Press, 1991.

Miller 2012

Miller WR, Rollnick S. Motivational Interviewing: Helping People Change. Guilford Press, 2012.

Miller 2014

Miller WR, Rollnick S. The effectiveness and ineffectiveness of complex behavioral interventions: impact of treatment fidelity. *Contemporary Clinical Trials* 2014;**37**(2):234-41.

Nahom 2005

Nahom D. Motivational interviewing and behavior change: how can we know how it works? *Journal of Evidence-Based Social Work* 2005;**2**:55-78.

Ouzzani 2016

Ouzzani M, Hammady H, Fedorowicz Z, Elmagarmid A. Rayyan — a web and mobile app for systematic reviews. Systematic Reviews 2016;**5**(210). [DOI: 10.1186/s13643-016-0384-4]

Pogue 1997

Pogue JM, Yusuf S. Cumulating evidence from randomised trials: utilizing sequential monitoring boundaries for cumulative meta-analysis. *Controlled Clinical Trials* 1997;**18**(6):580-93.

Project MATCH 1997

Project MATCH Research Group. Matching Alcoholism Treatments to Client Heterogeneity: Project MATCH posttreatment drinking outcomes. *Journal of Studies on Alcohol* 1997;**58**(1):7-29.

RevMan Web 2022 [Computer program]

Review Manager Web (RevMan Web). Version 4.12.0. The Cochrane Collaboration, 2022. Available at revman.cochrane.org.

Rubak 2005

Rubak S, Sandbaek A, Lauritzen T, Christensen B. Motivational interviewing: a systematic review and meta-analysis. *British Journal of General Practice* 2005;**55**(513):305-12.

Saitz 2021

Saitz R, Miller SC, Fiellin DA, Rosenthal RN. Recommended use of terminology in addiction medicine. *Journal of Addiction Medicine* 2021;**15**(1):3-7.

Saunders 1993

Saunders JB, Aasland OG, Babor TF, de la Fuente JR, Grant M. Development of the Alcohol Use Disorders Screening Test (AUDIT). WHO collaborative project on early detection of persons with harmful alcohol consumption. II. *Addiction* 1993;**88**:791-804.

Schulte 2014

Schulte MT, Hser Y-I. Substance use and associated health conditions throughout the lifespan. *Public Health Review* 2014;**35**:3. [DOI: 10.1007/BF03391702]

Schumacher 2020

Schumacher JA, Williams DC. Mental health professionals' guide to understanding harmful substance use. In: Psychological Treatment of Medical Patients Struggling with Harmful Substance Use. Washington, DC: American Psychological Association, 2020:11-23.

Schünemann 2023

Schünemann HJ, Higgins JP, Vist GE, Glasziou P, Akl EA, Skoetz N, et al. Chapter 14: Completing 'Summary of findings' tables and grading the certainty of the evidence (Section 14.3 Describing the assessment of the certainty of a body of evidence using the GRADE framework). In: Higgins JP, Thomas J, Chandler J, Cumpston M, Li T, Page MJ, Welch VA (editors). *Cochrane Handbook for Systematic Reviews of Interventions* version 6.4 (updated August 2023). Available from www.training.cochrane.org/handbook.

Sobell 1992

Sobell LC, Sobell MB. Time line follow-back: A technique for assessing self-reported ethanol consumption. In: Allen J, Litten RZ, editors(s). Measuring Alcohol Consumption: Psychosocial and Biological Methods. Totowa, NJ: The Humana Press, Inc, 1992:41-72.

UNODC 2022

United Nations: Office on Drugs and Crime (UNODC). World Drug Report 2022. www.unodc.org/unodc/en/data-and-analysis/world-drug-report-2022.html (accessed prior to 1 November 2023).

UNODC 2023

United Nations: Office on Drugs and Crime (UNODC). World Drug Report 2023. https://www.unodc.org/res/WDR-2023/WDR23_Exsum_fin_SP.pdf 2023.

Vasilaki 2006

Vasilaki EI, Hosier SG, Cox WM. The efficacy of motivational interviewing as a brief intervention for excessive drinking: a meta-analytic review. *Alcohol and Alcoholism* 2006;**41**(3):328-35.

White 1989

White HR, Labouvie EW. Towards the assessment of adolescent problem drinking. *Journal of Studies on Alcohol* 1989;**50**:30-7.

WHO 1993

World Health Organization (WHO). The ICD-10 Classification of Mental and Behavioural Disorders. Diagnostic Criteria for Research. Geneva: WHO, 1993.

WHO 2001

Babor TF, Biddle-Higgins JC, Saunders JB, Monteiro MG. AUDIT: The Alcohol Use Disorders Identification Test: Guidelines for Use in Primary Health Care. Geneva, Switzerland: World Health Organization, 2001. [https://apps.who.int/iris/handle/10665/67205]

WHO 2010

World Health Organization. The Alcohol, Smoking and Substance Involvement Screening Test (ASSIST). www.who.int/publications/i/item/978924159938-2 2010.

WHO 2018

World Health Organization (WHO). International Classification of Diseases 11th revision (ICD-11). icd.who.int/browse11/l-m/en (accessed prior to 1 November 2023).

WHO 2019

World Health Organization (WHO). Global Status Report on Alcohol and Health 2018. World Health Organization, 2019.

WHO 2022

World Health Organization (WHO). Alcohol Fact Sheet; May 2022. www.who.int/news-room/fact-sheets/detail/alcohol (accessed prior to 1 November 2023).

Witkiewitz 2022

Witkiewitz K, Pfund RA, Tucker JA. Mechanisms of behavior change in substance use disorder with and without formal treatment. *Annual Review of Clinical Psychology* 2022;**18**:497-525.

Zomahoun 2017

Zomahoun HT, Guénette L, Grégoire JP, Lauzier S, Lawani AM, Ferdynus C, et al. Effectiveness of motivational interviewing interventions on medication adherence in adults with chronic diseases: a systematic review and meta-analysis. *International Journal of Epidemiology* 2017;**46**(2):589-602.

References to other published versions of this review

Smedslund 2011

Smedslund G, Berg RC, Hammerstrøm KT, Steiro A, Leiknes KA, Dahl HM, et al. Motivational interviewing for substance abuse. *Cochrane Database of Systematic Reviews* 2011, Issue 5. Art. No: CD008063. [DOI: 10.1002/14651858.CD008063.pub2]

* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

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

Aharonovich 2017

Study characteristics	
Methods	Multisite RCT (3 sites)
Participants	240 individuals who used non-injection drugs from large urban HIV primary care clinics receiving HIV or preventive HIV services in the USA
Interventions	1. Brief MI (1 session, 25 to 30 min) (n = 77)* 2. Brief MI + HealthCall (n = 80) 3. Educational control (n = 83)*
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** days of use of primary drug use, total dollar amount of primary drug use Follow-up at 60 days, 6 months, and 12 months
Notes	*These interventions were included in the comparison

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**

Aharonovich 2017 *(Continued)*

Random sequence generation (selection bias)	Low risk	"Randomization was stratified on drug use severity, depression and unstable housing using urn randomization."
Allocation concealment (selection bias)	Unclear risk	Insufficient information provided.
Blinding (performance bias and detection bias) Patients and providers	High risk	"Counsellors administering MI-only or MI+HealthCall were blind to participants' assignment to these two treatment conditions until after the MI." No blinding of participants and providers to assignment to MI versus educational control.
Blinding (performance bias and detection bias) Assessors	High risk	Self-assessment of drug use, assessed in interviews.
Incomplete outcome data (attrition bias) All outcomes	Low risk	6.7%, 12.1%, 13.3% loss to follow-up at 60 days, 6 months, and 12 months, respectively, with small differences between conditions. Reasons for missing data were not assessed.
Selective reporting (reporting bias)	High risk	Substance use at 6 and 12 months was reported incompletely (only in figures, without SD).
Other bias	High risk	Only self-reported outcomes. Relevant differences in high-school education (> 10%), no sample size calculation reported. No additional sources of bias appear to be present.

Alderson 2020

Study characteristics	
Methods	Multisite RCT (6 six local authorities)
Participants	112 young people in care aged 12 to 20 years at risk of substance misuse from the USA
Interventions	1. MET (maximum 6 sessions, approximately 60 min) (n = 38) 2. Social Behaviour and Network Therapy (up to 6 sessions, approximately 60 min) (not included in review) (n = 38) 3. Usual care (n = 36)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** heavy drinking episodes, use of the most problematic classified substance, recruitment and retention rates **Secondary:** mental health and well-being, quality of life, placement stability, sexual behaviour Follow-up at 12 months
Notes	

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**

Alderson 2020 *(Continued)*

Random sequence generation (selection bias)	Low risk	Computer random generator, stratified by placement type (residential / non-residential), site (local authority) and age band (12 to 14 / over 14).
Allocation concealment (selection bias)	Low risk	Central allocation using a secure web-based system.
Blinding (performance bias and detection bias) Patients and providers	High risk	Blinding not possible for participants or providers; "the trial statistician and health economist were blinded (...) until final analysis."
Blinding (performance bias and detection bias) Assessors	High risk	Self-reported outcomes on substance use were assessed in questionnaires.
Incomplete outcome data (attrition bias) All outcomes	High risk	46.5% loss at 12 months, balanced across groups. Reasons for loss to follow-up were reported by group.
Selective reporting (reporting bias)	Low risk	All pre-planned outcomes from the protocol were reported in the study.
Other bias	Unclear risk	Only non-physiological (self-reported) outcomes available. No additional sources of bias appear to be present.

Anton 2005

Study characteristics	
Methods	RCT
Participants	160 outpatient individuals classified as alcoholics from the USA
Interventions	1. Naltrexone + MET (4 times) (n = 41) 2. Placebo + MET (4 times) (n = 39)* 3. Naltrexone + CBT (weekly) (n = 39) 4. Placebo + CBT (weekly) (n = 41)*
Outcomes	**Physiological:** **Primary:** blood GGT, CDT, urine drug screen **Non-physiological:** **Primary:** number relapsed, drinks per drinking day, per cent abstinent **Secondary:** none Follow-up over 12 weeks
Notes	*These interventions were included in the comparison
Risk of bias	

Bias	Authors' judgement	Support for judgement

Anton 2005 *(Continued)*

Random sequence generation (selection bias)	Unclear risk	"Subjects were randomly assigned to 1 of 4 treatment conditions."
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	Low risk	No blinding, but most outcomes were physiological and also used to validate self-reports, and not likely to be influenced by lack of blinding.
Blinding (performance bias and detection bias) Assessors	Low risk	Insufficient information to know whether assessors were blinded. But most outcomes were physiological, used to validate self-reports, and not likely to be influenced by lack of blinding.
Incomplete outcome data (attrition bias) All outcomes	Low risk	15% attrition at 12 weeks after treatment. Balanced across conditions. Reasons addressed. ITT analysis performed. "All outcome analyses were conducted under an intention-to-treat analysis plan on all subjects who had at least 1 post-randomization outcome measurement."
Selective reporting (reporting bias)	Unclear risk	The published report included all expected outcomes based on the stated hypotheses.
Other bias	Low risk	Used collateral and biological measurement to corroborate self-reports of substance use. There were no differences between groups at baseline. No additional sources of bias appear to be present.

Ball 2007a

Study characteristics	
Methods	RCT
Participants	Community sample of 98 people from the USA who are not dependent but heavy drinking
Interventions	1. Brief MET (n = 34)* 2. Brief coping skills (n = 35) 3. Waiting-list control (n = 29)*
Outcomes	**Physiological:** **Primary:** alcohol breath testing **Non-physiological:** **Primary:** frequency of days drinking, amount of drinks per drinking day **Secondary:** none
Notes	*These interventions were included in the comparison

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**

Ball 2007a *(Continued)*

Random sequence generation (selection bias)	Unclear risk	"...participants were randomised to a 3-week waiting list control (WLC) group or one of two manual-guided brief interventions."
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	Low risk	No blinding, but most outcomes were physiological, used to validate self-reports, and not likely to be influenced by lack of blinding.
Blinding (performance bias and detection bias) Assessors	Low risk	Insufficient information to know whether assessors were blinded. But most outcomes were physiological, used to validate self-reports, and not likely to be influenced by lack of blinding. The non-blinding may have caused bias regarding the interviews, but the hand-held computer assessment is unlikely to have caused bias.
Incomplete outcome data (attrition bias) All outcomes	Low risk	7% attrition at 3 weeks after treatment. Balanced across conditions. Used ITT analysis and the non-completers were all accounted for.
Selective reporting (reporting bias)	Unclear risk	The published report included all expected outcomes based on the stated hypotheses.
Other bias	Low risk	Alcohol breath testing used as check of self-report. Differences between groups at baseline were not reported. No additional sources of bias appear to be present.

Ball 2007b

Study characteristics	
Methods	Multisite RCT (5 sites)
Participants	461 people from five outpatient substance-use programmes in the USA
Interventions	1. MET (n = 216) 2. Counselling as usual (n = 245)
Outcomes	**Physiological:** **Primary:** urinary drug analysis **Non-physiological:** **Primary:** days per week of primary substance use **Secondary:** retention in treatment (days enroled in treatment programme, % enroled in programme at 4-month follow-up)
Notes	

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**

Ball 2007b *(Continued)*

Random sequence generation (selection bias)	Low risk	"The randomisation used a computerized program. (...) This program involved a process of urn allocation."
Allocation concealment (selection bias)	Unclear risk	"The randomisation used a computerized program that was managed by off-site personnel, but accessed locally by a research staff who communicated the assigned therapy condition."
Blinding (performance bias and detection bias) Patients and providers	Low risk	No blinding, but most outcomes were physiological, also used to validate self-reports, and not likely to be influenced by lack of blinding.
Blinding (performance bias and detection bias) Assessors	Low risk	Insufficient information to know whether assessors were blinded. But most outcomes were physiological, also used to validate self-reports, and not likely to be influenced by lack of blinding.
Incomplete outcome data (attrition bias) All outcomes	Low risk	32% attrition at 8 weeks after treatment. 32% attrition at 16 weeks after treatment. "There were no significant differences between therapy conditions or Therapy condition x Program Site interactions in the rates of follow-up or in the presence or frequency of missing data points." Reasons for loss to-follow-up are not stated. The researchers performed an ITT analysis.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the stated hypotheses.
Other bias	High risk	Time spent in training was not balanced across conditions. Some contamination of therapy conditions may have occurred. Differences between groups at baseline were not reported.

Barnett 2007

Study characteristics	
Methods	RCT
Participants	225 American college students referred to attend alcohol education following an alcohol-related incident
Interventions	1. Brief MI (n = 112) 2. Computer-delivered education (Alcohol 101 CD-ROM (n = 113)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** number of drinking days, number of heavy drinking days, average number of drinks per drinking day, average estimated BAC, alcohol problems **Secondary:** motivation to change alcohol use (Contemplation Ladder)
Notes	

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**

Barnett 2007 *(Continued)*

Random sequence generation (selection bias)	Low risk	Random numbers table.
Allocation concealment (selection bias)	Unclear risk	"The counsellor opened an envelope containing the baseline condition assignment, prepared by the project coordinator." It remains unclear whether envelopes were sequentially numbered, opaque, and sealed.
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	Low risk	"A research assistant who was blind to intervention condition conducted the 3- and 12-months follow-up assessments in person, or by phone and mail (...)."
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	5% attrition at 3-month follow-up and 6% attrition at 12-month follow-up with no differences between conditions. Reasons for missing data not stated. ITT not performed.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the stated hypotheses.
Other bias	Unclear risk	Only self-reported outcomes. There were no differences between groups at baseline.

Bazargan-Hejazi 2005

Study characteristics	
Methods	Quasi-RCT
Participants	295 patients in an emergency department who were 18 years or older and tested positive for risky alcohol consumption in the USA
Interventions	1. Brief MI + booster telephone call at 10 days post enrolment (n = 144) 2. Usual care (n = 151)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** drinks per drinking day, more than 6 drinks per occasion at least weekly, and AUDIT score **Secondary:** none Follow-up at 3 months after enrolment
Notes	

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**

Bazargan-Hejazi 2005 *(Continued)*

Random sequence generation (selection bias)	High risk	"Each of the 3 health promotion advocates performed random allocation for their own enrollees, assigning the first participant by a flip of a coin, and alternating status thereafter."
Allocation concealment (selection bias)	High risk	"Each of the 3 health promotion advocates performed random allocation for their own enrollees, assigning the first participant by a flip of a coin, and alternating status thereafter."
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	Low risk	"To guard against interviewer bias and to ensure that health promotion advocates were blinded to the patients' randomization allocation for the 3-month follow-up assessments, enrollees were not followed up by the same health promotion advocate who assessed them initially. Patients were notified not to reveal their group assignment to any project staff at any time."
Incomplete outcome data (attrition bias) All outcomes	High risk	37% attrition at the 3-month follow-up, balanced between groups. Reasons for attrition explained. ITT analysis was not performed.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the stated hypotheses.
Other bias	High risk	Only self-reported outcomes. The intervention group had a higher rate of drug use and lower mean age at baseline.

Bell 2007

Study characteristics	
Methods	RCT
Participants	60 veterans enroled in substance-use treatment at the New Mexico Veterans Affairs Health Care System, USA
Interventions	1. MI + TAU (n = 40) 2. TAU (n = 20)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** drinks per day, number of drinking days, percent within safe drinking limits, substance use per day, and number of substance use days **Secondary:** none Follow-up at 2 months
Notes	
Risk of bias	

Bell 2007 *(Continued)*

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"Participants were assigned to condition by a computerized urn randomisation program which balanced for distribution to the groups by the following factors: age, education, presence or absence of history of head injury with loss of consciousness, gender, and enrolment (yes/no) in the six standard treatments..."
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	Unclear risk	It is not stated whether assessors were blinded.
Incomplete outcome data (attrition bias) All outcomes	High risk	22% were lost to follow-up at 2 months. No ITT analysis. Reasons for loss to follow-up stated, but reasons for removal were that they were disqualified because of lack of baseline drinking (n = 7). Loss was balanced.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the stated hypotheses.
Other bias	High risk	Only self-reported outcomes. More females received MI.

Berman 2010

Study characteristics	
Methods	Single-center RCT
Participants	213 patients at a drug detoxification hospital unit in Sweden
Interventions	1. MI (1 session, 45 to 120 min) (n = 137) 2. Treatment as usual (n = 76)
Outcomes	**Physiological:** none **Nonspecific:** alcohol use, readiness to change alcohol use/drug use, self-efficacy (regarding the capacity to abstain from drinking alcohol in various situations of temptation/abstention from drugs), in-depth aspects of drug use (type of drug used, positive and negative aspects of drug use, treatment readiness), general readiness to change a current problem Follow-up of at least 3 months but overall follow-up times varied
Notes	

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**

Berman 2010 *(Continued)*

Random sequence generation (selection bias)	High risk	Semi-randomly allocated ("consequent alteration of the randomized design", "during weeks when only one or two patients agreed to participate in the study, these were automatically allocated to the MI treatment group").
Allocation concealment (selection bias)	High risk	Semi-randomly allocated ("consequent alteration of the randomized design", "during weeks when only one or two patients agreed to participate in the study, these were automatically allocated to the MI treatment group").
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding of participants and providers.
Blinding (performance bias and detection bias) Assessors	High risk	Self-reported outcomes (alone or with the help of a research assistant).
Incomplete outcome data (attrition bias) All outcomes	High risk	Loss to follow-up of a total of 59% of participants at 3 months with imbalances between groups; participants who did not receive MI were excluded (66% of participants who were randomized to MI), causes of loss-to-follow-up were not described.
Selective reporting (reporting bias)	High risk	Not all of planned outcomes have been reported.
Other bias	High risk	Only self-reported outcomes. Baseline differences between intervention groups in substance use. Due to logistical challenges in delivering MI (some MI-trained staff were reluctant to take part in the study), 66% of participants randomised to MI did not receive the intervention.

Bernstein 2009

Study characteristics	
Methods	Pilot RCT
Participants	210 participants aged 14 to 21 years in an urban, academic paediatric emergency department in the USA
Interventions	1. Brief MI (n = 68) 2. Assessed control (n = 71) 3. Non-assessed control (n = 71)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** marijuana consumption including a 30-day self-report of marijuana use, attempts to quit, cut back, or change conditions of use, and risk factor questions repeated at follow-up **Secondary:** none Follow-up at 12 months
Notes	We do not report data on the non-assessed control because baseline data on this group were not reported.

Bernstein 2009 *(Continued)*

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"Randomization was based on computer-generated random numbers in blocks of 100 stratified by age group (14-17 and 18-21 years)."
Allocation concealment (selection bias)	Low risk	"A double opaque envelope system enabled blinding of the research assistants who performed the assessment to randomisation status. The first envelope, with randomisation to assessed (Int, AC) or non assessed (NAC) status, was opened immediately after enrolment. A second envelope indicating Int or AC status was not opened until after assessment."
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	Low risk	"Participants were cautioned not to reveal to the research assistants at the time of follow-up whether or not they had received any further testing after enrolment"
Incomplete outcome data (attrition bias) All outcomes	High risk	30% loss to follow-up at 3 months in the assessed groups, not balanced between groups. 29% loss to follow-up at 12 months across all groups, not balanced across groups. Reasons for loss not stated. No ITT analysis, but worst-case scenario analysis.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the stated hypotheses.
Other bias	High risk	Only self-reported outcomes. The intervention group used marijuana on more days per month than the assessed control (AC) group at baseline.

Bien 1993

Study characteristics	
Methods	RCT
Participants	32 people from a Veterans' Affairs (VA) outpatient substance-use treatment programme in the USA
Interventions	1. Brief MI + standard outpatient treatment (n = 16) 2. Attention placebo interview + standard outpatient treatment (n = 16)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** SEC (standard drink units), blood alcohol level, percent days abstinent **Secondary:** VA treatment attendance
Notes	

Risk of bias

Bien 1993 *(Continued)*

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"(...) half were assigned at random to receive a motivational interview, while the rest served as a control group."
Allocation concealment (selection bias)	Unclear risk	"(...) the experimenter opened a sealed envelope (...)." It is not stated whether the envelopes were sequentially numbered or opaque.
Blinding (performance bias and detection bias) Patients and providers	Unclear risk	Blinding of providers was not possible, but participants could have been blinded.
Blinding (performance bias and detection bias) Assessors	Low risk	Assessors "were kept blind to group assignment."
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	19% attrition at 6-month follow-up, balanced between groups. Reasons for attrition explained. Unclear whether ITT was performed.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the stated hypotheses.
Other bias	Low risk	Collateral report as check of self-report. There were no differences between groups at baseline. No additional sources of bias appear to be present.

Borsari 2005

Study characteristics	
Methods	Multisite RCT (2 sites)
Participants	64 American students mandated to a substance-use prevention programme
Interventions	1. Brief MI (n = 34) 2. Alcohol education session (n = 30)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** drinks per week, binge-drinking episodes, typical BAC, peak BAC, RAPI **Secondary:** none
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"Randomly assigned."

Borsari 2005 *(Continued)*

Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	Unclear risk	It is not stated whether the assessors were blinded.
Incomplete outcome data (attrition bias) All outcomes	High risk	11% loss to follow-up after 3 months and 25% lost to follow-up after 6 months. Balance in numbers not stated. Reasons for missing data not stated. ITT analysis not performed.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the stated hypotheses.
Other bias	Unclear risk	Collateral report as check of self-report. There were baseline differences in AUDIT, typical BAC, and number of drinks per week.

Borsari 2012

Study characteristics	
Methods	RCT (single site)
Participants	405 American undergraduate students with continued risky alcohol use after a brief advice session
Interventions	1. Brief MI with personalised feedback (1 session, 60 to 90 min) (n = 211) 2. Assessment only (n = 194)
Outcomes	**Physiological:** none **Non-specific:** alcohol use (heavy drinking days, heavy drinking episodes), alcohol-related problems, participant satisfaction, recidivism Follow-up at 3, 6, and 9 months
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Urn randomisation
Allocation concealment (selection bias)	Low risk	"(...) On-site computer using a locked file which could be accessed only after inputting the details of the participant."
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding of participants and providers.

Borsari 2012 *(Continued)*

Blinding (performance bias and detection bias) Assessors	High risk	Self-reported results in web-based questionnaires on drug use without physiological control.
Incomplete outcome data (attrition bias) All outcomes	Low risk	6% loss to follow-up at 3 and 9 months, 9% at 6 months with no imbalances between groups. Reasons for loss not stated.
Selective reporting (reporting bias)	High risk	Heavy drinking days were only reported in figures without numbers and exact values.
Other bias	Unclear risk	Only self-reported outcomes. 9% of randomised participants did not receive the intervention. Differences between groups at baseline and sample-size calculation were not reported. No additional sources of bias appear to be present.

Brown 2010

Study characteristics	
Methods	RCT
Participants	184 men and women in Canada who had been driving while impaired (DWI), with drinking problems, who were recidivists, and who were not currently engaged in DWI interventions
Interventions	1. Brief MI (n = 92) 2. Information advice (n = 92)
Outcomes	**Physiological:** **Primary:** biomarkers of alcohol use (GGT, AST, ALT, MCV) by blood assay **Non-physiological:** **Primary:** alcohol use-related behaviours (percent risky drinking days) using the MMPI-Mac Scale **Secondary:** subsequent substance use treatment service utilisation (data not reported), readiness to change
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computerised urn randomisation
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement
Blinding (performance bias and detection bias) Patients and providers	Low risk	"Participants, interviewers who administered the baseline and follow-up assessments, the statistician who conducted the initial analyses to test the main hypotheses, and investigators were blind to participant assignment."

Brown 2010 *(Continued)*

Blinding (performance bias and detection bias) Assessors	Low risk	"Participants, interviewers who administered the baseline and follow-up assessments, the statistician who conducted the initial analyses to test the main hypotheses, and investigators were blind to participant assignment."
Incomplete outcome data (attrition bias) All outcomes	Low risk	7% were lost after randomisation and intervention. They were excluded from further analyses (no ITT analysis). No reasons for attrition. A further 6% was lost and data were estimated.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the stated hypotheses.
Other bias	Low risk	"Threat of invalidity in self-report was addressed by corroboration from bio markers and measurement of social desirability in response styles." There were no differences between groups at baseline. No additional sources of bias appear to be present.

Brown 2015

Study characteristics	
Methods	Multisite RCT (2 children and adolescent units of psychiatric hospitals)
Participants	151 adolescents in the USA who met the criteria for a substance-use disorder, excluding nicotine, and one or more psychiatric disorders
Interventions	1. MI (2 sessions, approximately 45 min) + treatment as usual (n = 79) 2. Treatment as usual (n = 72)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** any substance use, alcohol use, marijuana use (latency to first use, days of use per month) **Secondary:** occurrence of negative (social, health, and legal) consequences resulting from alcohol and drug use, problem behaviours Follow-up during the first 6 months and at 7 to 12 months
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Computer random number generator
Allocation concealment (selection bias)	Low risk	Drawing of lots (lots for each condition were placed in an envelope and drawn at random by the data analyst to determine the order of cohort group assignment).
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.

Brown 2015 *(Continued)*

Blinding (performance bias and detection bias) Assessors	Low risk	Self-report of daily alcohol and drug use via interview. "Reported number of days using marijuana in the month (1, 6, and 12 months post-discharge) was highly related to whether THC was positive or negative in the urine, for all three months when the urine was collected."
Incomplete outcome data (attrition bias) All outcomes	High risk	10%, 15%, 17%, 20%, and 24% were lost to follow-up at 1, 3, 6, and 9 months, respectively, with no imbalances between groups; reasons were not stated.
Selective reporting (reporting bias)	High risk	No results for long-term follow-up reported.
Other bias	Unclear risk	No sample size calculation reported; very few baseline criteria reported; valid urine toxicology results were obtained for 52.3%, 46.4%, and 50.3% of the sample at 1, 6, and 12-month follow-ups. No additional sources of bias appear to be present.

Carey 2006

Study characteristics	
Methods	RCT
Participants	509 American students who met criteria for heavy drinking
Interventions	1. Timeline Follow-Back (TLFB) control (n = 89) 2. TLFB basic MI (n = 87) 3. TLFB enhanced MI (n = 86) 4. Control (n = 81)* 5. Basic BMI (n = 85)* 6. Enhanced BMI (n = 81)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** drinks per week, drinking per drinking day, heavy drinking frequency, peak BAC, RAPI score **Secondary:** none
Notes	*These interventions were included in the comparison

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"Assigned randomly."
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.

Carey 2006 *(Continued)*

Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	High risk	Assessors "were not blind to condition."
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	3% loss to follow-up at one month, 23% at 6 months, and 22% at 12 months. Balanced across conditions. Reasons for missing data addressed but not detailed. Unclear whether ITT analysis was used.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the stated hypotheses.
Other bias	Low risk	Collateral report as check of self-report. There were no differences between groups at baseline. No additional sources of bias appear to be present.

Carey 2011

Study characteristics	
Methods	RCT
Participants	677 American college students who had violated campus alcohol policies
Interventions	1. Brief MI (1 session, 30 to 148 min) (n = 164)* 2. Computer-delivered intervention (interactive CD-ROM program) (n = 167) 3. Computer-delivered intervention (interactive CD-ROM program with assessment and feedback) (n = 172) 4. Delayed intervention control (n = 174)*
Outcomes	**Physiological:** none **Non-specific:** drinks per heaviest and typical week, heavy drinking frequency, estimated peak and typical blood alcohol concentration, alcohol problems Follow-up at 1, 6, and 12 months
Notes	*These interventions were included in the comparison

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)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias)	High risk	No blinding.

Carey 2011 *(Continued)*

Patients and providers		
Blinding (performance bias and detection bias) Assessors	High risk	Self-reported outcomes.
Incomplete outcome data (attrition bias) All outcomes	High risk	5%, 61%, and 31% loss to follow-up at 1, 6, and 12 months with imbalances between three groups with follow-up over 12 months. For the delayed control group, only the 1-month follow-up data were available (2% loss to follow-up).
Selective reporting (reporting bias)	Unclear risk	No published protocol available.
Other bias	Unclear risk	Only self-reported outcomes; no sample size analysis or baseline data per group reported; delayed-intervention control condition provided only 1-month follow-up data. No additional sources of bias appear to be present.

Carroll 2006a

Study characteristics	
Methods	Multisite RCT (5 sites)
Participants	423 people in the USA using substances and entering outpatient treatment in five community-based treatment settings
Interventions	1. MI + standard intake evaluation (n = 173) 2. Standard intake evaluation (n = 178)
Outcomes	**Physiological:** urine and breath test **Non-physiological:** **Primary:** days of use of primary substance **Secondary:** readiness to change (URICA (data not reported)), retention in treatment (percent retained at site, number of sessions completed)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"(...) participants were randomised to condition (MI or standard evaluation) using an urn randomisation."
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	Low risk	No blinding, but most outcomes were physiological, also used to validate self-reports, and not likely to be influenced by lack of blinding.

Carroll 2006a *(Continued)*

Blinding (performance bias and detection bias) Assessors	Unclear risk	Insufficient information to know whether assessors were blinded. But most outcomes were physiological, also used to validate self-reports, and not likely to be influenced by lack of blinding.
Incomplete outcome data (attrition bias) All outcomes	High risk	24% attrition at one month, 27% attrition at 3 months, balanced by condition. No reasons for attrition reported. No ITT analysis.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the stated hypotheses.
Other bias	Unclear risk	Urine and breath samples to check on self-report. Time spent in training was not balanced across conditions, and clinicians assigned to MI received more training and supervision. There were no differences between groups at baseline.

Carroll 2006b

Study characteristics	
Methods	RCT
Participants	136 young adults in the USA who met criteria for marijuana-dependence and were referred by the criminal justice system
Interventions	1. MET/contingency management (n = 33)* 2. Drug counselling/contingency management (n = 34) 3. MET (n = 35) 4. Drug counselling (n = 33)*
Outcomes	**Physiological:** marijuana positive urine specimens (%) **Non-physiological:** **Primary:** days of marijuana use (%), longest duration of continuous abstinence **Secondary:** none
Notes	*These interventions were included in the comparison

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	"(...) were randomised to one of the four treatment conditions."
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	Low risk	No blinding, but most outcomes were physiological, also used to validate self-reports, and not likely to be influenced by lack of blinding.

Carroll 2006b *(Continued)*

Blinding (performance bias and detection bias) Assessors	Low risk	Insufficient information to know whether assessors were blinded. But most outcomes were physiological, also used to validate self-reports, and not likely to be influenced by lack of blinding.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	38% attrition at 3 months and 21% attrition at 6 months. Imbalance between groups. Reasons for missing data not stated. ITT analysis was performed.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the stated hypotheses.
Other bias	Low risk	Urine toxicology screens and breath samples to check on self-report. There were no differences between groups at baseline. No additional sources of bias appear to be present.

Carroll 2009

Study characteristics	
Methods	Multisite RCT (5 sites)
Participants	436 Hispanic people from the USA who met criteria for substance abuse
Interventions	1. MET (3 individual sessions) (n = 214) 2. Counselling as usual (3 individual sessions) (n = 222)
Outcomes	**Physiological:** percent positive urine specimens **Non-physiological:** **Primary:** days of substance use by week, percent days abstinent from alcohol **Secondary:** treatment retention (days enroled in treatment at community treatment programme through week 16)
Notes	The design paralleled that of Ball 2007b.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Urn allocation.
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	Low risk	No blinding, but most outcomes were physiological, also used to validate self-reports, and not likely to be influenced by lack of blinding.
Blinding (performance bias and detection bias) Assessors	Low risk	Insufficient information to know whether assessors were blinded. But most outcomes were physiological, also used to validate self-reports, and not likely to be influenced by lack of blinding.

Carroll 2009 *(Continued)*

Incomplete outcome data (attrition bias) All outcomes	High risk	28% loss to follow-up. Reasons for attrition not described but similar between groups. No ITT analysis even though they reported an intention-to-treat sample.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the stated hypotheses.
Other bias	Unclear risk	Only self-reported outcomes. Differences at baseline were not reported.

Chanut 2007

Study characteristics	
Methods	Pilot RCT
Participants	51 offenders convicted of driving under the influence (DUI) in Canada
Interventions	1. MI (n = 24) 2. Psycho-education (n = 27)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** heavy drinking days (> 6 units/day) and AUDIT **Secondary:** service utilisation Follow-up at 3 and 6 months
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Urn randomisation: "Un protocole de randomisation par urnes assisté par ordinateur (Project MATCH Research Group, 1993) a été utilisé pour assigner les participants à l'une des deux conditions."
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	Unclear risk	Blinding of providers was not possible, but participants could have been blinded.
Blinding (performance bias and detection bias) Assessors	Unclear risk	It is not stated whether assessors were blinded.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Attrition was 22% at 3 months and 29% at 6 months. Balanced across groups. Reasons for loss to follow-up not reported. Use of ITT analysis was reported, but it is unclear whether all reported analyses used ITT.

Chanut 2007 *(Continued)*

Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the stated hypotheses.
Other bias	Unclear risk	Used collaterals to verify self-report. There were baseline differences in days of hazardous drinking and the Drug Abuse Screening Test.

Colby 2018

Study characteristics	
Methods	RCT
Participants	167 non-treatment-seeking young adults from the USA who reported heavy drinking in the past month
Interventions	1. Brief MI (1 session, approximately 60 min) (n = 83) 2. Relaxation training (1 session, approximately 60 min) (n = 84)
Outcomes	**Physiological:** none **Non-physiological:** **Primary**: average number of drinks per week, percent drinking days, percent heavy drinking days, estimated average BAC and peak BAC **Secondary:** brief young adult alcohol consequences, help seeking, drinking reduction strategies, employment outcomes, life satisfaction, adolescent reinforcement survey (NCT01546025) Follow-up post-intervention, 6 weeks, and 3 months
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Urn randomisation, stratified by age, gender, education status, and past-month heavy drinking frequency.
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding of participants and providers.
Blinding (performance bias and detection bias) Assessors	High risk	Self-reported alcohol consumption via self-administered interactive computer programs.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Follow-up of 97% and 96% at 6 weeks and 3 months, respectively, with no differences between groups.
Selective reporting (reporting bias)	High risk	Results on all pre-planned primary outcomes (NCT0154602) were reported, but not for the secondary outcomes.

Colby 2018 *(Continued)*

Other bias	Unclear risk	No physiological outcomes reported. No differences between groups at baseline. No additional sources of bias appear to be present.

Connors 2002

Study characteristics	
Methods	RCT
Participants	126 American clients entering outpatient alcoholism treatment
Interventions	1. MI (n = 40)* 2. Role induction (n = 37) 3. Non-preparatory session control group (n = 36)*
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** abstinent days, heavy drinking days **Secondary:** retention in treatment (therapy session attendance)
Notes	*These interventions were included in the comparison

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"Clients were randomly assigned to one of three preparatory intervention conditions."
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	Unclear risk	Blinding of providers was not possible, but participants could have been blinded.
Blinding (performance bias and detection bias) Assessors	Unclear risk	It is not stated whether the assessors were blinded.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	13 (10%) did not provide Timeline Follow-Back Interview data at the 12-month point. Of these 13, 12 actively withdrew from the study or ceased cooperation with follow-up efforts and 1 moved and could not be located. We do not know the attrition for the post-treatment and the 3, 6, and 9-month follow-up. Balance between conditions was not stated and ITT analysis was not performed.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study purposes.
Other bias	Low risk	Collateral report to check on self-report. There were no differences between groups at baseline. No additional sources of bias appear to be present.

Copeland 2001

Study characteristics	
Methods	RCT
Participants	229 Australian cannabis users
Interventions	1. 6-session cognitive behaviour therapy (CBT) (including elements of MI) (n = 78)* 2. 1-session CBT (including elements of MI) (n = 82)* 3. Delayed treatment control group (n = 69)*
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** daily amount of cannabis use in last month, cannabis dependence, proportion of cannabis related problems **Secondary:** none
Notes	* 6-session cognitive behaviour therapy (CBT) (including elements of MI) or 1-session CBT (including elements of MI) (n = 82) was compared with delayed treatment control group

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	"(...) randomised to one of three conditions."
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	Unclear risk	No blinding but the outcome measurements were not likely to be influenced by lack of blinding due to validation with physiological measurement.
Blinding (performance bias and detection bias) Assessors	Low risk	"(...) follow-up was conducted by an independent researcher "blind" to the subject's treatment allocation."
Incomplete outcome data (attrition bias) All outcomes	High risk	26% attrition at a median of 237 days of follow-up (individual follow-up durations, range: 102 to 553 days). Dropout was balanced across groups. No reasons for dropout were stated. "Analyses were conducted on an intention-to-treat basis." A best-case scenario was reported.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study purposes.
Other bias	High risk	17% had sought assistance to moderate their use in the time between their participation in this study and follow-up. They used urinalysis of cannabinoid levels as a validation of self-reported cannabis use. Differences between groups at baseline were not reported.

D'Amico 2008

Study characteristics	
Methods	Pilot RCT
Participants	64 teens classified as high-risk in a primary care clinic that provides health care for underserved populations in the USA
Interventions	1. 15 minutes of MI (n = 38) 2. Usual care (n = 26)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** number of days last month drank alcohol, number of times used marijuana on days used, number of alcoholic drinks consumed on days drinking, number of days consumed more than 3 drinks, number of days used marijuana **Secondary:** none
Notes	Project CHAT

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)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	Unclear risk	Mailed questionnaire used for follow up.
Incomplete outcome data (attrition bias) All outcomes	High risk	34% of those randomised did not complete the final survey (unequal numbers). Eight participants did not want to participate, but the rest could not be reached. No ITT analysis.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the stated hypotheses.
Other bias	Unclear risk	Only self-reported outcomes. Differences between groups at baseline were not reported.

D'Amico 2018

Study characteristics

D'Amico 2018 *(Continued)*

Methods	RCT (4 sites)
Participants	249 youths in the USA who met criteria for at-risk substance use
Interventions	1. CHAT intervention (brief MI, 15 to 20 min) (n = 153) 2. Usual care (n = 141)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** number of times alcohol used **Secondary:** number of times used marijuana **Non-specific:** drinking, heavy drinking, negative alcohol consequences, marijuana use, negative marijuana consequences, perceived peer use (alcohol and marijuana), time spent around peers who use (alcohol and marijuana), and resistance self-efficacy (alcohol and marijuana) Follow-up at 3, 6, and 12 months
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"Allocation was adjusted using a random number generator."
Allocation concealment (selection bias)	Unclear risk	Insufficient information provided to make a judgement.
Blinding (performance bias and detection bias) Patients and providers	High risk	Insufficient information provided to make a judgement. Blinding of providers was not possible.
Blinding (performance bias and detection bias) Assessors	High risk	Self-reported outcomes
Incomplete outcome data (attrition bias) All outcomes	Low risk	Loss to follow-up in the intervention group was 26% at 3 months, 16% at 6 months, and 20% at 12 months. Loss to follow-up in the control group was 39% at 3 months, 21% at 6 months, and 19% at 12 months. "Analyses were performed using intent-to-treat (ITT) and accounted for missing data due to loss to follow-up and item missingness using multiple imputation."
Selective reporting (reporting bias)	Low risk	All planned outcomes were reported (NCT01797835).
Other bias	Unclear risk	Only non-physiological (self-reported) outcomes available; no differences between groups at baseline. No additional sources of bias appear to be present.

De Gee 2014

Study characteristics	
Methods	RCT (8 substance-use treatment centres)
Participants	119 adolescents with cannabis use in the Netherlands
Interventions	1. Brief MET (Weed-Check in Dutch) (2 sessions, 60 to 90 min) (n = 58) 2. Information session (1 session, approximately 50 min) (n = 61)
Outcomes	**Physiological:** none **Primary**: quantity of cannabis use (mean weekly number of joints) **Secondary**: frequency of cannabis use (mean number of days per week with cannabis use), symptoms of cannabis dependence, stage of change, psychosocial functioning Follow-up at 3 months
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Stratified (by region) block randomisation (lists generated in Excel 2007, applied through a Microsoft Access database).
Allocation concealment (selection bias)	Unclear risk	"Prevention workers were responsible for recruitment and screening, results of the randomization was communicated to prevention workers after the baseline assessment had been completed."
Blinding (performance bias and detection bias) Patients and providers	Low risk	"Participants were blind to the condition to which they had been allocated, only after the baseline assessment had been completed were the results of the randomization communicated to prevention workers"
Blinding (performance bias and detection bias) Assessors	High risk	Only self-reported outcomes via questionnaires.
Incomplete outcome data (attrition bias) All outcomes	High risk	Differences in loss-to follow-up between groups (22.4% loss to follow-up in the intervention group with MI versus 13.1% in the control condition).
Selective reporting (reporting bias)	High risk	Not all the study's pre-specified primary outcomes have been reported (stage of change scores were reported incompletely so that they could not be entered in a meta-analysis).
Other bias	Unclear risk	Only non-physiologically (self-reported) outcomes available; low sample size (out of a planned sample size of 140, 119 participants were recruited). No differences between groups at baseline. No additional sources of bias appear to be present.

De Wildt 2002

Study characteristics

De Wildt 2002 *(Continued)*

Methods	Multisite RCT (14 sites)
Participants	248 Dutch participants meeting DSM-IV criteria for alcohol dependence or use
Interventions	1. Acamprosate + MET (3-weekly sessions of 20 min) (n = 86)* 2. Acamprosate + CBT (7-weekly sessions of 60 min) (n = 78) 3. Acamprosate for 28 weeks (n = 77)*
Outcomes	**Physiological:** **Primary:** GGT **Non-physiological:** **Primary:** number abstinent, number relapsed, time to first relapse, number of abstinent days, rate of continuous abstinence **Secondary:** none
Notes	*These interventions were included in the comparison

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"Sealed envelope randomisation with balancing by blocks of 15 was used to obtain equal numbers of patients per treatment group from each centre."
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	Low risk	No blinding, but most outcomes were physiological, also used to validate self-reports, and not likely to be influenced by lack of blinding.
Blinding (performance bias and detection bias) Assessors	Low risk	Insufficient information to know whether assessors were blinded. But most outcomes were physiological, also used to validate self-reports, and not likely to be influenced by lack of blinding.
Incomplete outcome data (attrition bias) All outcomes	Low risk	30% attrition at 6-month follow-up. Balanced dropout and reasons for dropout stated. ITT analysis completed.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	High risk	23% of participants consulted some other professional for alcohol-related problems during the treatment. Blood samples were drawn to check on self-report. There were no differences between groups at baseline.

Dermen 2011

Study characteristics

Methods	RCT

Dermen 2011 *(Continued)*

Participants	154 heterosexual American college students who met criteria for heavy drinking and behavioural risk for infection with HIV and other sexually-transmitted diseases
Interventions	1. MI-based intervention (2 sessions, approximately 45 and 30 min) to reduce alcohol risk behaviour (n = 39) 2. MI-based intervention (2 sessions, approximately 60 and 45 min) to reduce HIV risk behaviour (not included in review) (n = 39) 3. MI-based intervention (2 sessions, approximately 60 and 45 min) to reduce alcohol and HIV risk behaviour (not included in review) (n = 36) 4. No intervention (n = 40)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** drinking frequency (drinking days, drinks per drinking days), sexual behaviour outcomes (occurrences of unprotected sex, number of partners) Follow-up at 3, 6, 9, 12, and 15 months
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"Prepared in advance by the project director using a random number table."
Allocation concealment (selection bias)	Low risk	Envelopes (prepared in advance by the project director).
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding of participants and providers.
Blinding (performance bias and detection bias) Assessors	Low risk	Self-reported outcomes; follow-up assessments were conducted by same-gender interviewers blind to experimental condition; reports were compared to collateral reports with no relevant differences.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Follow-up completion rates for the 3, 6, 9, 12, and 15-month follow-ups were 95%, 94%, 92%, 91%, and 91%, respectively, and did not differ significantly by condition.
Selective reporting (reporting bias)	Unclear risk	Insufficient information to permit judgement (no protocol available).
Other bias	Unclear risk	Missing information at baseline (except for drinking and sex behaviour); self-reported outcomes were compared with reports from collaterals. No additional sources of bias appear to be present.

Dieperink 2014

Study characteristics

Dieperink 2014 *(Continued)*

Methods	RCT (2 hepatitis clinics)
Participants	139 veterans with hepatitis-C virus and alcohol dependence or use from the USA
Interventions	1. MET with feedback (4 sessions, approximately 30 to 45 min) (n = 70) 2. Control health education (4 sessions, approximately 30 to 45 min) (n = 69)
Outcomes	**Physiological:** biomarkers of alcohol use, urine drug screen **Non-physiological:** **Primary:** number of standard drinks per week, percentage of days abstinent **Secondary:** heavy drinking days, 30-day abstinence, BDI-II (Beck Depression Inventory - second edition), BSI (Brief Symptom Inventory), PCL-C (Post-Traumatic Stress Disorder Checklist-civilian) Follow-up at 3 and 6 months
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Pocock & Simon's minimisation method.
Allocation concealment (selection bias)	Low risk	Stratified block randomisation using random allocation software by the study statistician.
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding of participants and providers.
Blinding (performance bias and detection bias) Assessors	Low risk	"All measures were administered by a research assistant who was blinded to the randomized condition, measurement of physiological data."
Incomplete outcome data (attrition bias) All outcomes	Low risk	Loss to follow-up of 16% of participants at 6 months with no differences between groups; causes were described.
Selective reporting (reporting bias)	Unclear risk	Insufficient information (no protocol available).
Other bias	Unclear risk	Only non-physiologically (self-reported) outcomes available; no other risk of bias identified.

Emmen 2005

Study characteristics

Methods	RCT
Participants	123 Dutch participants who visited an outpatient clinic for problem drinking

Emmen 2005 *(Continued)*

Interventions	1. Dutch version of Drinker's Checkup (n = 61) 2. Care as usual (n = 62)
Outcomes	**Physiological:** serum carbohydrate-deficient transferrin **Non-physiological:** **Primary:** units per day in previous six months **Secondary:** motivation to change
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"(...) balanced block randomisation. The main researcher (M.J.E) used sealed envelopes to generate the allocation sequence."
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	Low risk	No blinding, but most outcomes were physiological, also used to validate self-reports, and not likely to be influenced by lack of blinding.
Blinding (performance bias and detection bias) Assessors	Low risk	Not blinded, but most outcomes were physiological, also used to validate self-reports, and not likely to be influenced by lack of blinding.
Incomplete outcome data (attrition bias) All outcomes	Low risk	9% loss to follow-up at 6 months. Balanced dropout. Reasons stated. ITT analysis performed.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Low risk	Serum carbohydrate-deficient transferrin (CDT) was measured (biological data). There were no differences between groups at baseline. No additional sources of bias appear to be present.

Feldstein 2007

Study characteristics	
Methods	RCT
Participants	55 underage individuals from the USA who met criteria for heavy drinking
Interventions	1. 1 session of MI (n = 40) 2. No treatment control (n = 15)
Outcomes	**Physiological:** none

Feldstein 2007 *(Continued)*

	Non-physiological: **Primary:** binge-drinking last 2 weeks, RAPI **Secondary:** none
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Used a random number list.
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	Low risk	"Undergraduate assistants blind to the randomization collected participant data at the follow-up."
Incomplete outcome data (attrition bias) All outcomes	Low risk	7% loss to follow-up at 2 months, balanced across groups. Reasons stated. No ITT analysis.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Unclear risk	Only self-reported outcomes. Differences between groups at baseline were not reported.

Feldstein Ewing 2021

Study characteristics	
Methods	RCT (juvenile justice program)
Participants	506 adolescents in the USA aged 13 to 18 participating in a juvenile justice programme and using alcohol and/or drugs at least once a month in the previous six months
Interventions	1. MI (2 sessions, approximately 60 min) (n = 258) 2. Alcohol and Cannabis Education (n = 248)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** alcohol use, alcohol dependence, alcohol-related problems, cannabis use, cannabis dependence, cannabis-related problems **Non-specific:** motivation to change alcohol/cannabis use, norms alcohol/cannabis, self-efficacy alcohol/cannabis

Feldstein Ewing 2021 *(Continued)*

	Follow-up at 3, 6, and 12 months
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Gender-stratified random number generator.
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Assessors	High risk	Self-reported outcomes "on a laptop via audio computer-assisted self-interview."
Incomplete outcome data (attrition bias) All outcomes	Low risk	87% follow-up at 6 months.
Selective reporting (reporting bias)	High risk	Changes were reported at 6-month follow-up, but not at 3 and 12 months as planned in the protocol. No differences between groups.
Other bias	Unclear risk	Only non-physiological (self-reported) outcomes available. No differences at baseline. No additional sources of bias appear to be present.

Field 2010

Study characteristics

Methods	RCT (urban trauma centre)
Participants	1336 participants from the USA who were injured and intoxicated
Interventions	1. Brief MI (1 session, approximately 30 to 40 min) 2. Treatment as usual (patient handouts)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** volume per week, maximum amount consumed in one day, percent days abstinent, alcohol problems, and dependence status **Non-specific:** treatment utilisation Follow-up at 6 and 12 months.
Notes	

Field 2010 *(Continued)*

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Insufficient information provided (permuted block design).
Allocation concealment (selection bias)	Unclear risk	Insufficient information provided.
Blinding (performance bias and detection bias) Patients and providers	High risk	Blinding not possible; study clinicians were blinded to patient randomisation prior to completion of the baseline assessment.
Blinding (performance bias and detection bias) Assessors	High risk	Only self-reported outcomes available.
Incomplete outcome data (attrition bias) All outcomes	High risk	Follow-up of 77% and 66% at 6 and 12 months, with no information about causes for dropout and differences between groups.
Selective reporting (reporting bias)	Unclear risk	Insufficient information (no registration or protocol available).
Other bias	Unclear risk	Only non-physiological (self-reported) outcomes available; no information on planned sample size or demographic baseline information per group. No additional sources of bias appear to be present.

Field 2020

Study characteristics	
Methods	RCT (one large urban trauma centre)
Participants	395 adult participants with trauma in the USA
Interventions	1. Single-session brief MI (30 to 45 min) (n = 137) 2. Brief MI with booster (BMI+B) (not included in review) (n = 126) 3. Brief advice (n = 132)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** drug use (abstinence, percent days abstinent) **Secondary:** alcohol and drug problems, perceived health status, re-injury, arrest, incarceration, substance-use drug treatment, mutual help group attendance, employment, homelessness, physical abuse (as the victim or perpetrator) Follow-up at 3, 6, and 12 months
Notes	

Field 2020 *(Continued)*

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Random number generator.
Allocation concealment (selection bias)	Low risk	Sequentially numbered opaque envelopes, opened after completion of baseline assessment.
Blinding (performance bias and detection bias) Patients and providers	High risk	Blinding not possible.
Blinding (performance bias and detection bias) Assessors	Low risk	Staff conducting baseline and follow-up assessments were blinded to the intervention; self-reported results were augmented by urine drug screens.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Follow-up of 94%, 91%, and 88% of participants over 3, 6, and 12 months, respectively, with no differences between groups in numbers and causes for loss to follow-up.
Selective reporting (reporting bias)	Unclear risk	Insufficient information reported (no registration or published protocol available).
Other bias	Low risk	No additional sources of bias appear to be present.

Freyer-Adam 2008

Study characteristics	
Methods	Quasi-RCT
Participants	595 patients in a general hospital in Germany. 25% were patients who met criteria for alcohol abuse, 57% for at-risk drinking, and 18% heavy episodic drinking.
Interventions	1. MI by liaison service (n = 249)* 2. MI by hospital physicians (n = 121) 3. TAU (n = 225)*
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** gram alcohol per day, gram alcohol past week **Secondary:** readiness to change drinking
Notes	*These interventions were included in the comparison It was not possible to monitor the fidelity of the intervention in physician arm.

Risk of bias

Freyer-Adam 2008 *(Continued)*

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	"(...) randomisation was conducted by time-frame, based on the date of admission."
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	High risk	"(...) the staff was not blind to the study group to which the participants had been assigned."
Incomplete outcome data (attrition bias) All outcomes	High risk	29% loss to follow-up at 12 months, not balanced, reasons provided. No ITT analysis.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	High risk	Only self-reported outcomes. Because staff became more experienced over time, they might have recruited different patients in the first period – when they recruited the controls – than in the later period – when they recruited to the intervention groups. There were differences between groups at baseline on satisfaction with health, age, and having an intimate partner.

Gaume 2014

Study characteristics	
Methods	RCT (single site)
Participants	441 non-treatment-seeking young men screened as hazardous drinkers in a recruitment centre for the Swiss army
Interventions	1. Brief MI (1 session, approximately 20 to 30 min) (n = 217) 2. Assessment only (n = 224)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** drinking composite score (computed from usual drinking days per week, usual drinks per drinking day, and frequency of binge-drinking), usual drinking days per week, usual drinks per drinking day, and frequency of binge-drinking Follow-up at 3 months
Notes	
Risk of bias	

Gaume 2014 *(Continued)*

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer random number generator.
Allocation concealment (selection bias)	Low risk	"Study inclusion happened during the conscription process for the Swiss military. During this process, conscripts were grouped by 50 and wore a badge numbered from 1 to 50. These badge numbers had no meaning and were attributed without any link to conscripts' identity (e.g. not related to conscript's name nor date of birth). For each group, we a priori generated a random order of badge numbers and printed this order on a sheet. Eligible conscripts' badge numbers were reported on this sheet, and the first 3 badge numbers on the list were allocated to BMI condition and the next 3 to control condition. Completed lists for each group were reviewed by a senior investigator."
Blinding (performance bias and detection bias) Patients and providers	High risk	Blinding of participants not possible.
Blinding (performance bias and detection bias) Assessors	High risk	Self-reported outcomes via questionnaires.
Incomplete outcome data (attrition bias) All outcomes	Low risk	82% follow-up at 3 months with no difference between groups.
Selective reporting (reporting bias)	Unclear risk	Insufficient information (no registration or protocol available).
Other bias	Unclear risk	Only non-physiological (self-reported) outcomes available; no sample size analysis reported. No differences at baseline. No additional sources of bias appear to be present.

Kadden 2007

Study characteristics	
Methods	RCT (dismantling design)
Participants	240 adults in the USA who smoke marijuana and meet DSM-IV criteria for cannabis dependence
Interventions	9 weeks of one of four conditions: 1. Case management control condition (9 weeky 1-hour) (n = 62)* 2. MET/CBT coping skills training (9 weekly 1 hour) (n = 61)* 3. Contingency management (9 weekly 15 min) (n = 54) 4. MET/CBT + Contingency management (9 weekly 1 hour) (n = 63)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** total 90-day continuous abstinence, proportion of days abstinent

Kadden 2007 *(Continued)*

	Secondary: readiness to change (Readiness to Change Questionnaire) Follow-up at 2 months
Notes	*These interventions were included in the comparison

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computerised urn randomisation.
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	Unclear risk	No blinding, but the outcome measurements are not likely to be influenced by lack of blinding due to validation with physiological measurement.
Blinding (performance bias and detection bias) Assessors	Unclear risk	Insufficient information to tell if assessor was blinded, but the outcome measurements were not likely to be influenced by lack of blinding due to validation with physiological measurement.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	17% lost to follow-up with reasons stated. Different attrition across groups. No ITT.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study purposes.
Other bias	Low risk	Urine samples were collected to check on self-report. There were no differences between groups at baseline. No additional sources of bias appear to be present.

Kahler 2004

Study characteristics	
Methods	RCT
Participants	48 American patients undergoing inpatient detoxification for alcohol dependence
Interventions	1. MET for 12-step involvement (n = 24) 2. Brief advice to attend AA (n = 24)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** percent of days abstinent, drinks per drinking day **Secondary:** AA/NA attendance and involvement
Notes	

Kahler 2004 *(Continued)*

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"Eight cohorts of 6 participants were run to obtain the desired sample with treatment conditions for each cohort determined randomly."
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	Low risk	"RAs (research assistants) were blind to treatment assignment of individuals and cohorts."
Incomplete outcome data (attrition bias) All outcomes	Low risk	48 were randomised. Attrition was 4%, 4%, 6%, 6%, 12%, and 12% at 1, 2, 3, 4, 5, and 6 months' follow-up, respectively. No reasons for insufficient data reported. No ITT analysis performed.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Unclear risk	Collateral reports were used. However, because the two treatments were of different length, it is not possible to determine whether treatment intensity rather than treatment content caused the observed effects. There were no differences between groups at baseline.

Kavanagh 2004

Study characteristics	
Methods	RCT
Participants	25 Australian inpatients with current misuse of non-opioid drugs
Interventions	1. Start Over and Survive (3 hours over 6 to 9 sessions within 7 to 10 days) (n = 13) 2. Standard care (n = 12)
Outcomes	**Physiological:** none **Nonphysiological:** **Primary:** abstinent or improved on all substances **Secondary:** none
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement

Kavanagh 2004 *(Continued)*

Random sequence generation (selection bias)	Low risk	"(...) participants were allocated randomly to conditions using a separate table of random permutations for each site."
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	Low risk	"The final assessment was undertaken by research staff who were blind to treatment conditions."
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Attrition was 4% at 6 months and 32% at 12 months. Balanced. We do not know the attrition at 6 weeks and 3 months. Reasons for loss were not reported. ITT analysis was performed.
Selective reporting (reporting bias)	High risk	No separate results for AUDIT, Severity of Dependence Scale and the Drug Check. Results for number abstinent and number improved were collapsed.
Other bias	High risk	Only self-reported outcomes. Groups were significantly different at baseline. Because there was no contact control, it is possible that the positive results were due to contact alone. Participants in the Start Over and Survive group had longer length of stay and less confidence in controlling substance use, and were living with fewer family members than participants in the standard care group at baseline.

Kay-Lambkin 2009

Study characteristics	
Methods	RCT
Participants	97 Australian people with comorbid major depression and alcohol/cannabis use
Interventions	Brief intervention for depressive symptoms followed by randomisation into 3 different groups: 1. Therapist-delivered MI/CBT (n = 35) 2. Computer-delivered MI/CBT (n = 32) (not included in review) 3. No further treatment (n = 30)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** alcohol/cannabis use and hazardous substance use Follow-up at 3, 6, and 12 months after baseline assessment using the Opiate Treatment Index (OTI) and the SCID-RV (Structured Clinical Interview for DSM - Research Version)
Notes	In one condition, MI/CBT was delivered by computer (not considered in this review). Intervention is called SHADE therapy (Self-Help for Alcohol and other drug use and Depression).
Risk of bias	

Kay-Lambkin 2009 *(Continued)*

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"A permuted block randomisation approach was used so that the distribution of participants across treatment conditions could be maintained regardless of the final sample size."
Allocation concealment (selection bias)	Low risk	"Treatment allocations were transferred from this list by an administrative assistant and concealed in individual envelopes labelled with the relevant participant code. Neither of these processes was conducted by personnel involved with the assessment or treatment phases of the study. Prior to the BI [brief intervention] session, the research clinicians were issued with a new randomisation envelope by the administrative assistant, which displayed the participant number on the outside of the envelope with the treatment allocation sealed inside. The envelope was opened by the participant at the conclusion of the BI session."
Blinding (performance bias and detection bias) Patients and providers	High risk	Patients and providers were not blinded.
Blinding (performance bias and detection bias) Assessors	Low risk	"At the conclusion of the treatment period all participants, regardless of treatment completion, met with an independent research clinician, blind to treatment allocation, to complete follow-up assessments."
Incomplete outcome data (attrition bias) All outcomes	Low risk	Attrition was 16% at 3-month follow-up, 19% at 6 months, and 16% at 12 months. Reasons provided. Not stated whether attrition was balanced. ITT analysis was performed.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Unclear risk	Only self-reported outcomes. Differences between groups at baseline were not fully reported. Age and gender were similar. No additional sources of bias appear to be present.

Kelly 2000

Study characteristics	
Methods	RCT
Participants	32 Australian women with alcohol and marital problems
Interventions	1. Alcohol-focused treatment (6 1-hour sessions including MI, CBT strategies, and relapse prevention) (n = 16) 2. 1-month waiting-list control group (n = 16)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** standard drinks per drinking day **Secondary:** none

Kelly 2000 *(Continued)*

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"(...) assigned randomly."
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	Unclear risk	It is not stated whether the assessors were blinded.
Incomplete outcome data (attrition bias) All outcomes	High risk	28% attrition at 1 month, 31% attrition at 6 months, and 38% attrition at 12 months' follow-up. Balanced across groups. Unclear whether ITT analysis was performed. Reasons for loss not reported.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Low risk	Collateral report to check on self-report. There were no differences between groups at baseline. No additional sources of bias appear to be present.

Logan 2015

Study characteristics	
Methods	RCT (Single site)
Participants	61 college students referred to Judicial Affairs after violating a campus alcohol policy in the USA
Interventions	1. BASICS (Brief Alcohol Screening and Intervention for College Students) feedback session with personalised normative feedback and individual MI (n = 18) 2. Alcohol Skills Training Program (ASTP) with use of MI techniques (ASTP) (not included in review) (n = 22) 3. Alcohol Diversion Program (ADP) (n = 16)
Outcomes	**Physiological:** none **Non-physiological:** **Non-specific:** alcohol consumption (peak weekend estimated blood concentrations, weekly drinks), consequences Follow-up at 2, 4, and 6 months

Logan 2015 *(Continued)*

Notes	Alcohol Skills Training Program was conducted in individual or group sessions, results were only available for ASTP/BASICS versus ADP and BASICS versus ASTP (results not included in meta-analyses)

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)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	High risk	Only BASIC sessions were individual, blinding not possible.
Blinding (performance bias and detection bias) Assessors	High risk	Only self-reported outcomes.
Incomplete outcome data (attrition bias) All outcomes	High risk	57% completed all three follow-up assessments, 21% completed some follow-up, and 21% did not complete any follow-up. Differences in response rates (people with heavier drinking were less likely than people with lighter drinking to follow-up), but no numbers were reported.
Selective reporting (reporting bias)	High risk	Not all outcome data from the different follow-up points were reported.
Other bias	Unclear risk	Only self-reported outcomes; no baseline values reported; no sample size calculation.

Mackiewicz Seghete 2022

Study characteristics

Methods	RCT
Participants	163 adolescents aged 15 to 19 from a Northwestern metropolitan area in the USA with at least 1 binge-drinking episode during previous 2 months
Interventions	1. Motivational interviewing (two individual 60-minute sessions) (n = 77) 2. Brief adolescent mindfulness (two individual 60-minute sessions) (n = 86)
Outcomes	**Physiological:** **Primary:** blood alcohol content (BrAC), urine sample **Non-physiological:** **Non-specific:** problem drinking (Rutgers Alcohol Problems Index) Follow-up at 3, 6, and 12 months

Mackiewicz Seghete 2022 *(Continued)*

Notes	The study examined youths' change in brain response to the target mechanism (therapist language during the interventions), and its impact on their behavioural treatment response.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomisation via coin toss.
Allocation concealment (selection bias)	Unclear risk	Not reported.
Blinding (performance bias and detection bias) Patients and providers	High risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Assessors	High risk	Physiological measurement of blood alcohol content and urine samples provided immediate screen to ensure that participants were not intoxicated at the time of MRI data collection, but did not serve as a control for self-reported substance use.
Incomplete outcome data (attrition bias) All outcomes	High risk	Follow-up of 82.4%, 75.0%, and 76.5% at 3, 6, and 12 months, respectively.
Selective reporting (reporting bias)	Unclear risk	No protocol available.
Other bias	Unclear risk	No baseline values reported for all participants or participants with pre-treatment scans; no sample size calculation.

Maisto 2001

Study characteristics

Methods	Multisite RCT (12 sites)
Participants	301 elderly people with hazardous alcohol use who presented for treatment at a primary care clinic in the USA
Interventions	1. MET (n = 101)* 2. Brief advice (n = 100) 3. Standard care (n = 100)*
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** days abstinent, number of drinks, drinks per drinking day, days 1 to 6 drinks **Secondary:** readiness to change (Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES)). Data not reported. Follow-up at 1, 3, 6, 9, and 12 months

Maisto 2001 *(Continued)*

Notes	We do not have follow-up data for 1, 3, and 9 months. *These interventions were included in the comparison

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Random numbers table.
Allocation concealment (selection bias)	Low risk	"The schedule was kept in an envelope in a locked drawer and was used only by the project coordinator."
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	Unclear risk	It is not stated whether the assessors were blinded.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Attrition was 5%, 8%, 14%, 15%, and 17% at 1 month, 3 months, 6 months, 9 months, and 12 months, respectively. Reasons for loss not reported. We don't know if loss was balanced across groups. No ITT analysis reported.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Low risk	Collateral reports were used to check self-report. There were no differences between groups at baseline. No additional sources of bias appear to be present.

Marijuana Treatment Project 2004

Study characteristics

Methods	Multisite RCT (3 sites)
Participants	450 American adults who met criteria for cannabis dependence
Interventions	1. 2-session MET (n = 146)* 2. 9-session MET (n = 156) 3. 4-month delayed treatment (n = 148)*
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** percent of days smoking, periods smoked per day, joints per day, dependence symptoms, abuse symptoms, marijuana problems **Secondary:** none
Notes	*These interventions were included in the comparison

Marijuana Treatment Project 2004 *(Continued)*

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Urn randomisation.
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgment.
Blinding (performance bias and detection bias) Patients and providers	Unclear risk	No blinding, but the outcome measurements were not likely to be influenced by lack of blinding due to validation with physiological measurement.
Blinding (performance bias and detection bias) Assessors	Unclear risk	"Research assistants were not blinded to the participants' experimental conditions." But the outcome measurements were not likely to be influenced by lack of blinding due to validation with physiological measurement.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Loss to follow-up at 4 months, 9 months, and 15 months were 11%, 13%, and 17%, respectively. Balanced. No reasons for loss reported. ITT performed (analysis of missing cases using baseline values.)
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Unclear risk	Collateral interviews and urine specimens to check on self-report. Numbers of sessions were confounded with differential content and process. Different expectancies of success were created by the differences in treatment length. There were no differences between groups at baseline.

Marsden 2006

Study characteristics	
Methods	Multisite RCT (5 sites)
Participants	342 adolescents and young adults in the UK who use stimulants
Interventions	1. BMI (n = 166) 2. Written health risk information (n = 176)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** ecstasy number of days, ecstasy tablets, cocaine powder number of days, cocaine g/day, crack number of days, crack g/day, cannabis number of days, cannabis g/day, alcohol number of days, alcohol g/weekday, alcohol g/weekend **Secondary:** none
Notes	
Risk of bias	

Marsden 2006 *(Continued)*

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"Two-group randomised controlled trial."
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	Unclear risk	No blinding but the outcome measurements were not likely to be influenced by lack of blinding due to validation with physiological measurement.
Blinding (performance bias and detection bias) Assessors	Low risk	"To guard against bias, all follow-up interviews were conducted by a different worker from the one who administered the participant's recruitment protocol."
Incomplete outcome data (attrition bias) All outcomes	Low risk	13% attrition at 6-month follow-up, balanced across conditions. Reasons not provided. "The analysis of outcome was conducted on an intention-to-treat (ITT) basis (involving all participants who were randomly assigned) and baseline scores were substituted for cases lost to follow-up."
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Low risk	Stimulant toxicology testing on a random 30%. There were no differences between groups at baseline. No additional sources of bias appear to be present.

Martin 2008

Study characteristics	
Methods	RCT
Participants	40 non-treatment-seeking adolescents aged 14 to 19 from Australia who use cannabis
Interventions	1. Two-session brief intervention (n = 20) 2. 3-month delayed treatment control condition (n = 20)
Outcomes	**Physiological:** urine test **Non-physiological:** **Primary:** days of cannabis use, mean quantity of cannabis used weekly, and number of DSM-IV dependence symptoms **Secondary:** none
Notes	Intervention is referred to as ACCU (Adolescent Cannabis Check-Up).

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"The randomisation sequence was generated by a computer random number generator."

Martin 2008 *(Continued)*

Allocation concealment (selection bias)	Low risk	"(...) participants were randomly allocated to one of the two conditions by means of a sequence of labelled cards contained within numbered sealed (opaque) envelopes that were prepared by an independent researcher and opened in the presence of the participant."
Blinding (performance bias and detection bias) Patients and providers	Low risk	No blinding, but most outcomes were physiological and also used to validate self-reports, and not likely to be influenced by lack of blinding.
Blinding (performance bias and detection bias) Assessors	Low risk	"Participants were followed-up by an independent researcher 3 months after their last involvement with the project." Most outcomes were physiological, also used to validate self-reports, and not likely to be influenced by lack of blinding.
Incomplete outcome data (attrition bias) All outcomes	Low risk	20% were lost to follow-up. Equal attrition across groups. ITT analysis conducted. Reasons for attrition not reported.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study purposes.
Other bias	Unclear risk	Urinalysis to validate self-report. The treatment group reported significantly more days of cannabis use in the previous 90 days than the control group.

Martino 2006

Study characteristics	
Methods	Pilot RCT
Participants	44 patients in the USA with dual diagnosis of psychotic and drug-related disorder
Interventions	1. Two sessions of MI (n = 24) 2. Two sessions of standard psychiatric interview (n = 20)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** days of primary drug use, secondary drug use, alcohol use **Secondary:** retention in treatment, readiness to change (URICA). Data not reported. Follow-up at post-treatment, 1, 2, and 3 months
Notes	

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Urn randomisation.

Martino 2006 *(Continued)*

Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	Low risk	Blinding of providers was not possible, but participants could have been blinded.
Blinding (performance bias and detection bias) Assessors	Low risk	"(...) two research staff members administered the assessments in a non-blinded fashion."
Incomplete outcome data (attrition bias) All outcomes	Low risk	14% were lost to at least one follow-up, balanced across groups. Reasons for loss not stated. ITT analysis performed.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study purposes.
Other bias	High risk	Only self-reported outcomes. There were differences at baseline in alcohol composite score and legal involvement.

Martino 2018

Study characteristics	
Methods	RCT
Participants	439 pregnant and non-pregnant women in 2 urban academic hospital-based reproductive healthcare clinics in the USA who smoked cigarettes or misused alcohol, illicit drugs, or prescription medication
Interventions	1. Electronically delivered “Screening, brief intervention and referral to treatment” (e-SBIRT) (single-session, 20 min) (n = 143)* 2. Clinician-delivered SBIRT (SBIRT) (single session, 20 min) (n = 145)* 3. Educational pamphlet plus existing treatment resources that constituted enhanced usual care (EUC) (control condition) (n = 151)
Outcomes	**Physiological:** none **Non-physiological:** **Co-primary:** self-reported days of primary substance use per month (28 days) (Timeline Followback interviews), treatment utilisation (substance-use treatment and self-help programmes) (self-reported, verified with treatment providers, review of medical records) Follow-up at 1, 3, and 6 months after randomisation
Notes	*These interventions were included in the comparison "Although the Timeline Followback interview provided daily data on substance use, we also collected urine samples at each assessment. The short window of detection (a few days) for urine toxicology tests renders this a suboptimal outcome for the many weeks between assessments, but testing enhances the veracity of self-report."
Risk of bias	

Martino 2018 *(Continued)*

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"We used the gRand urn randomization program (version 1.1; Yale University, New Haven, CT) that runs in Microsoft Access (Microsoft Corporation, Redmond, WA). Research staff ran the program from a laptop computer to assign participants to condition after the baseline assessment to decrease bias."
Allocation concealment (selection bias)	Low risk	"We used the gRand urn randomization program (version 1.1; Yale University, New Haven, CT) that runs in Microsoft Access (Microsoft Corporation, Redmond, WA). Research staff ran the program from a laptop computer to assign participants to condition after the baseline assessment to decrease bias."
Blinding (performance bias and detection bias) Patients and providers	High risk	Unblinded
Blinding (performance bias and detection bias) Assessors	Unclear risk	"Although most follow-up assessments were completed by a different research staff person from the one who originally assigned condition, this was not always logistically possible; therefore, blinding was not guaranteed in the study."
Incomplete outcome data (attrition bias) All outcomes	Low risk	"Retention rates exceeded 84% at all follow-up points and were comparable among groups"; reasons for dropout were reported
Selective reporting (reporting bias)	Low risk	All primary outcome measures reported in the protocol were reported in the study.
Other bias	Low risk	In addition to self-reported substance use, urine samples were collected at each assessment: "The short window of detection (a few days) for urine toxicology tests renders this a suboptimal outcome for the many weeks between assessments, but testing enhances the veracity of self-report." No additional sources of bias appear to be present.

Marín-Navarrete 2017

Study characteristics	
Methods	RCT (3 outpatient addiction care centres)
Participants	120 adults who requested outpatient treatment for any substance use at the study sites in Mexico
Interventions	1. MET in Spanish (METS) (3 sessions over a 28-day period) (n = 54) 2. Counselling as usual (n = 66)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** days of substance use, days of treatment services utilisation Follow-up post-treatment and at 8 weeks and 16 weeks
Notes	

Marín-Navarrete 2017 *(Continued)*

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-based urn randomisation procedure, stratified by gender and primary substance of use.
Allocation concealment (selection bias)	Low risk	Central (online clinical trial management software).
Blinding (performance bias and detection bias) Patients and providers	High risk	"(...) participants, research assistants, and counsellors were aware of the allocated group (...)."
Blinding (performance bias and detection bias) Assessors	Low risk	Interview-based assessment of self-reported substance use: "Urine toxicology screens were used to confirm reported substance use at each study visit."
Incomplete outcome data (attrition bias) All outcomes	Low risk	96%, 92.5%, and 95% follow-up for post-treatment, 8 weeks, and 16 weeks, respectively.
Selective reporting (reporting bias)	Low risk	Pre-planned secondary endpoints were not reported.
Other bias	Unclear risk	No demographic information at baseline reported. No results on urine toxicology screens reported. No additional sources of bias appear to be present.

Mastroleo 2010

Study characteristics

Methods	RCT
Participants	122 college students in the USA who met criteria for heavy drinking
Interventions	1. Peer counselled MI with supervision (n = 74) 2. Peer counselled MI without supervision (n = 82) 3. No treatment control (n = 82)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** Daily Drinking Questionnaire (total drinks per week, peak BAC, heavy drinking behaviours)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	No mention of allocation method.

Mastroleo 2010 *(Continued)*

Allocation concealment (selection bias)	Unclear risk	No mention of allocation concealment.
Blinding (performance bias and detection bias) Patients and providers	High risk	Participants and providers were not blinded to treatment allocation.
Blinding (performance bias and detection bias) Assessors	Unclear risk	It is not stated whether assessors were blinded.
Incomplete outcome data (attrition bias) All outcomes	Low risk	16% attrition at 3 months. Balanced. No reasons stated. ITT analysis performed (imputed missing data).
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study purposes.
Other bias	Unclear risk	Only self-reported outcomes. 61/156 (39%) of randomised participants did not receive the intervention. Differences between groups at baseline were not reported.

MATCH 1993

Study characteristics	
Methods	Multisite RCT (9 clinical research units and a co-ordinating centre)
Participants	1726 inpatients and outpatients in the USA
Interventions	1. Motivational Enhancement Therapy (MET) 2. Cognitive Behavioural Therapy (CBT) 3. Twelve-Step Facilitation Therapy (TSF)
Outcomes	**Physiological:** gamma-glutamyl transferase **Non-physiological:** **Primary:** percent days abstinent, drinks per drinking day, drinking consequences **Secondary:** none
Notes	Not reported how many people were randomised to each condition.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"Randomization to treatment was performed using a computerized urn balancing program designed to minimize differences on critical demographic and matching variables."
Allocation concealment (selection bias)	Unclear risk	Randomisation process was centrally controlled by the co-ordination centre.

MATCH 1993 *(Continued)*

Blinding (performance bias and detection bias) Patients and providers	Low risk	No blinding, but most outcomes were physiological, also used to validate self-reports, and not likely to be influenced by lack of blinding.
Blinding (performance bias and detection bias) Assessors	Unclear risk	No blinding, but most outcomes were physiological, also used to validate self-reports, and not likely to be influenced by lack of blinding.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Attrition was less than 10% at 3, 6, 9, 12, and 15 months' follow-up in the after-care and outpatient groups. Balanced. Reasons for 3-year attrition in the outpatient group given. The authors state that all randomised participants are included in the analyses, but in a results table, they included only data for participants who had non-missing values at all three time points.
Selective reporting (reporting bias)	Unclear risk	Primary outcomes measures (PDA (percent days abstinent) and DDD (drinks per drinking day)) reported incompletely (only by graphs). Outcome for drinking consequences only reported in tables for 9- and 15-month follow-up.
Other bias	Low risk	Collateral report, laboratory tests (blood and urine) as check on self-report. Breathalyser at each assessment point. Inclusion criteria contained no planned involvement for additional treatment during the study period. There were no differences between groups at baseline. No additional sources of bias appear to be present.

McCambridge 2008

Study characteristics	
Methods	RCT
Participants	326 young people aged 16 to 19 who use cannabis and are not seeking help from 11 London Further Education colleges in the UK
Interventions	1. Single session intervention of MI (n = 164) 2. Drug information and advice giving (n = 162)
Outcomes	**Physiological:** none (but bogus pipeline) **Non-physiological:** **Primary:** 30-day frequency of cannabis use (joints past week), 30-day alcohol consumption (units of alcohol past week + AUDIT score) **Secondary:** none Follow-up at 3 and 6 months
Notes	Bogus pipeline: technique used to reduce response bias in self-reporting by convincing the respondent that the researcher has a reliable and valid instrument.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"Computerised individual randomisation was undertaken by the local clinical trials unit."

McCambridge 2008 *(Continued)*

Allocation concealment (selection bias)	Low risk	"Decisions were communicated on an individual basis via telephone or e-mail to researchers after recruitment and baseline data collection to preserve allocation concealment."
Blinding (performance bias and detection bias) Patients and providers	Unclear risk	No blinding but bogus pipeline.
Blinding (performance bias and detection bias) Assessors	Low risk	"Study participants self-completed questionnaires which were distributed by a researcher who was blind to study allocation."
Incomplete outcome data (attrition bias) All outcomes	Low risk	17% and 19% lost to follow-up at 3 and 6 months, respectively. Unequal between groups. Reasons for loss to follow-up not stated. ITT analysis using last observation carried forward.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the stated hypotheses.
Other bias	Low risk	A bogus pipeline approach was used in addition to self-report. There were no differences between groups at baseline. No additional sources of bias appear to be present.

McDevitt-Murphy 2014

Study characteristics	
Methods	RCT
Participants	68 combat veterans of the wars in Iraq and Afghanistan screened positive for hazardous drinking in a Veterans Affairs Medical Center primary care clinic in the USA
Interventions	1. MI counselling with personalised feedback (1 session, approximately 60 min) (n = 35) 2. Personalised feedback (n = 33)
Outcomes	**Physiological:** none **Non-physiological:** **Nonspecific:** mean drinks per week, mean drinking days per week, total binge days, drinks per drinking day, recent consequences Follow-up at 6 weeks and 6 months
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)	Unclear risk	Insufficient information to permit judgement.

McDevitt-Murphy 2014 *(Continued)*

Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding of participants and personnel.
Blinding (performance bias and detection bias) Assessors	High risk	Only self-reported outcomes.
Incomplete outcome data (attrition bias) All outcomes	Low risk	94% and 93% reported follow-up at 6 weeks and 6 months, respectively, with no differences between groups.
Selective reporting (reporting bias)	Unclear risk	No registration or protocol available.
Other bias	Unclear risk	No differences between groups at baseline, only non-physiological (self-reported) outcomes available, no definition of a primary outcome, no sample size calculation reported, no additional sources of bias appear to be present.

Mertens 2014

Study characteristics	
Methods	RCT
Participants	403 young adults from a low-income population in South Africa screened positive for either binge-drinking or drug use
Interventions	1. Brief MI plus a referral resource list (n = 206) 2. Minimally enhanced usual care (n = 197)
Outcomes	**Physiological:** none **Non-physiological:** **Non-specific:** alcohol and drug use, total alcohol/cannabis/methamphetamine ASSIST Score, prevalence of at-risk use (alcohol/cannabis/methamphetamine /sedatives/methanqualone), heavy drinking, readiness to change alcohol and drug use Follow-up at 3 months
Notes	

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Insufficient information provided.
Allocation concealment (selection bias)	Low risk	"Research assistants opened a sealed envelope which contained the randomization result for the patient."
Blinding (performance bias and detection bias)	High risk	Single-blinded trial (only research interviewers were blinded to randomisation status).

Mertens 2014 *(Continued)*

Patients and providers		
Blinding (performance bias and detection bias) Assessors	High risk	Research interviewers were blinded to randomisation status, but only self-reported outcomes were assessed.
Incomplete outcome data (attrition bias) All outcomes	Low risk	90% follow-up at 3 months with small differences between groups.
Selective reporting (reporting bias)	High risk	For the pre-planned outcome readiness to change, only baseline data are presented.
Other bias	Unclear risk	No differences between groups at baseline; only non-physiological (self-reported) outcomes available; no definition of a primary outcome; no sample size calculation reported; no additional sources of bias appear to be present.

Miller 2003

Study characteristics	
Methods	Multisite RCT (2 sites)
Participants	208 outpatients and inpatients entering public agencies for treatment of drug problems in the USA
Interventions	1. 1 session MI (n = 104) 2. Treatment as usual (n = 104)
Outcomes	**Physiological:** urine toxicology **Non-physiological:** **Primary:** percent days abstinent from illicit drugs and alcohol **Secondary:** retention (frequency of therapy sessions attended)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Urn randomisation.
Allocation concealment (selection bias)	Unclear risk	"The urn randomisation was performed while the client was completing baseline assessment."
Blinding (performance bias and detection bias) Patients and providers	Unclear risk	No blinding but urine toxicology.
Blinding (performance bias and detection bias) Assessors	Low risk	"Assessment for all participants was conducted by experienced interviewing staff of CASAA's Program Evaluation Services unit, who were unaware of treatment group assignment."

Miller 2003 *(Continued)*

Incomplete outcome data (attrition bias) All outcomes	Unclear risk	At 3, 6, 9, and 12 months, attrition was 7%, 14%, 20%, and 21%, respectively. Loss was balanced across groups. Reasons not reported. ITT analysis not performed.
Selective reporting (reporting bias)	Unclear risk	Addiction Severity Index was reported in the methods section, but it was not reported in the results.
Other bias	Unclear risk	Urine drug screens and collateral reports were used to check self-reports. There is a possibility that the standard care group had received MI. The MI group received one additional session. There were no differences between groups at baseline.

Monti 2016

Study characteristics	
Methods	RCT (2 sites)
Participants	372 patients from the USA in emergency care with risk levels for both alcohol and sexual risk behaviours
Interventions	1. MI with personalised feedback (1 session, approximately 60 min) (n = 184) 2. Usual care (brief advice) (n = 188)
Outcomes	**Physiological:** urine toxicology **Non-physiological:** **Primary:** alcohol use (heavy drinking days, number of drinks consumed per week), sex risk (condomless sex with non-steady partners, any condomless sex with non-steady partners) **Secondary:** clinical benefit outcomes (excessive drinking, drinking "violates heavy drinking limits", alcohol-related problems, sex under the influence of alcohol and/or other drugs Follow-up at 3, 6, and 9 months
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"Computer-based urn randomization procedure stratified by patient age, gender, education, race, AUDIT score, and past 3-month condom use."
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding of participants and personnel.
Blinding (performance bias and detection bias) Assessors	High risk	Only self-reported outcomes, assessed by trained research assistants masked to intervention condition.

Monti 2016 *(Continued)*

Incomplete outcome data (attrition bias) All outcomes	Low risk	81%, 84%, and 84% follow-up at 3, 6, and 9 months, respectively. Analysis of 88% of participants with at least one follow-up, with slightly lower rate in the MI group (84% versus 92%).
Selective reporting (reporting bias)	Unclear risk	No registration or protocol available.
Other bias	Unclear risk	No differences between groups at baseline; only non-physiological (self-reported) outcomes available; no sample size or power analysis reported; no additional sources of bias appear to be present.

Morgenstern 2009

Study characteristics	
Methods	RCT
Participants	150 non-treatment-seeking men from the USA who have sex with men.
Interventions	1. 4 sessions of MI (n = 70) 2. 4 sessions educational control (n = 80)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** days of any club drug use (Timeline Followback) **Secondary:** none Follow-up at 3, 6, 9, and 12 months
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Urn randomisation procedure.
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	Unclear risk	No blinding, but the outcome measurements are not likely to be influenced by lack of blinding due to validation with physiological measurement.
Blinding (performance bias and detection bias) Assessors	Unclear risk	Insufficient information to tell if assessor was blinded, but the outcome measurements are not likely to be influenced by lack of blinding due to validation with physiological measurement.
Incomplete outcome data (attrition bias) All outcomes	High risk	23% attrition at 12 months. No difference between conditions. No reasons stated. No ITT analysis.

Morgenstern 2009 *(Continued)*

Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the stated hypotheses.
Other bias	Unclear risk	Self-report was confirmed by urine toxicology testing. There was more marijuana use in the treatment group at baseline.

Morgenstern 2012

Study characteristics	
Methods	RCT
Participants	89 adults who met criteria for problem drinking and were seeking treatment in the USA
Interventions	1. MI (4 sessions over 45 to 60 minutes at weeks 1, 2, 4, and 8) (n = 29) 2. Spirit only MI (4 sessions over 45 to 60 minutes at weeks 1, 2, 4, and 8) without directional or technical elements (not included in review) (n = 30) 3. Self-change (normative feedback, personal responsibility, and efforts to foster self-efficacy) (n = 30)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** mean sum of standard drinks per week **Secondary:** drinks per drinking day, number of negative consequences Follow-up at 1, 4, and 8 weeks
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Urn randomisation that included drawing of lots.
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding of participants and personnel.
Blinding (performance bias and detection bias) Assessors	High risk	Self-reported outcomes via Timeline Followback Interview (TLFB).
Incomplete outcome data (attrition bias) All outcomes	Low risk	100%, 96%, 92%, and 80% follow-up at 1, 4, 8, and 12 weeks, respectively.
Selective reporting (reporting bias)	Unclear risk	No registration or published protocol available.

Morgenstern 2012 *(Continued)*

Other bias	Unclear risk	No relevant differences between groups at baseline; only non-physiological (self-reported) outcomes available; no sample size or power analysis reported; no additional sources of bias appear to be present.

Morgenstern 2017

Study characteristics	
Methods	RCT
Participants	139 people from the USA who met the criteria for problem drinking, had a substance-use diagnosis, and sought help to reduce their alcohol use
Interventions	1. MI (4 sessions, approximately 45 to 60 min) at weeks 1, 2, 5, and 8 (n = 47)* 2. MI (4 sessions, approximately 45 to 60 min) at weeks 1, 2, 5, and 8 without directional or technical elements (n = 46) 3. Non-therapy control condition: after 8 weeks, participants who were still drinking were offered 4 sessions of MI (n = 46)*
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** sum of standard drinks per week, heavy drinking days per week **Secondary:** baseline readiness to change and strength of commitment not to drink heavily Follow-up at 1, 4, and 8 weeks
Notes	*These interventions were included in the comparison

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Urn randomisation with drawing of lots.
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding of participants and personnel.
Blinding (performance bias and detection bias) Assessors	High risk	Self-reported outcomes via Timeline Followback Interview (TLFB).
Incomplete outcome data (attrition bias) All outcomes	Low risk	94% and 91% follow-up at 5 and 8 weeks, respectively.
Selective reporting (reporting bias)	Unclear risk	No registration or protocol available.

Morgenstern 2017 *(Continued)*

Other bias	Unclear risk	No relevant differences between groups at baseline; only non-physiological (self-reported) outcomes available; no sample size or power analysis reported; no additional sources of bias appear to be present.

Murphy 2010

Study characteristics	
Methods	RCT
Participants	133 ethnically diverse students from the USA who reported one or more heavy drinking episodes
Interventions	1. Brief Alcohol Screening and Intervention program for College Student (BASICS) with personalised feedback elements (approximately 50 to 60 min) (n = 46)* 2. Web-based feedback program (approximately 50 to 60 min) (n = 45) 3. Assessment only (n = 42)*
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** drinks per week in the past month, frequency of heavy drinking **Non-specific**: normative discrepancy, self-ideal discrepancy, motivation to change Follow-up: post-treatment and after 1 month
Notes	*These interventions were included in the comparison

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Random assignment using a random number table with stratification by gender and ethnicity.
Allocation concealment (selection bias)	Unclear risk	"Clinician who performed the intervention also completed the baseline assessment but was not aware of the condition assignment until the completion of the assessment."
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding of participants and providers possible.
Blinding (performance bias and detection bias) Assessors	High risk	Interview by a blinded research assistant to assess self-reported outcomes.
Incomplete outcome data (attrition bias) All outcomes	Low risk	89%, 84%, and 93% 1-month follow-up in the three treatment groups with small differences between groups and no reasons reported.
Selective reporting (reporting bias)	Unclear risk	No registration or protocol available.

Murphy 2010 *(Continued)*

Other bias	Unclear risk	No baseline characteristics per group reported; only non-physiological (self-reported) outcomes available; no sample size or power analysis reported; no additional sources of bias appear to be present.

Murphy 2012

Study characteristics	
Methods	RCT (4 sites)
Participants	143 adolescents and young adults in the USA who are HIV-positive with at least one problem behaviour (substance use, unprotected sex, or less than 90% HIV medication adherence)
Interventions	1. MI intervention (4 sessions over 12 weeks, approximately 60 min) plus standard care (n = 68) 2. Standard care (n = 75)
Outcomes	**Physiological:** none **Non-physiological:** **Non-specific:** alcohol and marijuana use (including use and the maximum times of use) Follow-up at 3, 6, 9, 12, and 15 months
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"Randomization was carried out using a permuted block design, with randomly determined block sizes of 4 and 6. Randomization was stratified by site and targeted problem behavior."
Allocation concealment (selection bias)	Low risk	"An automated clinical trial management tool based on telephone interactive voice-response technology was used to randomize subjects to their treatment arm. Using state-of-the-art technology, this tool allows users to send and receive randomization information from any telephone."
Blinding (performance bias and detection bias) Patients and providers	High risk	Participants and providers of MI were not blinded.
Blinding (performance bias and detection bias) Assessors	High risk	Self-reported results on the basis of a questionnaire.
Incomplete outcome data (attrition bias) All outcomes	Low risk	"The follow-up rates were 79.7%, 85.3%, 79.7%, 81.1%, and 79.7% at 3, 6, 9, 12, and 15 months post-intervention, respectively. No differences in the rates of attrition were statistically significant between the intervention and the control youths at the five follow-up assessments. Missing data were imputed using the MCMC method for those who were lost follow-up."
Selective reporting (reporting bias)	High risk	Specific outcome data not stated for each follow-up point.

Murphy 2012 *(Continued)*

Other bias	Unclear risk	No baseline characteristics per group reported; only non-physiological (self-reported) outcomes available; no sample size or power analysis reported; no additional sources of bias appear to be present.

Murphy 2018

Study characteristics	
Methods	RCT (3 comprehensive domestic violence agencies)
Participants	228 men who are partner-violent with hazardous or problem drinking in the USA
Interventions	1. MET (4 sessions over 4 consecutive weeks) (n = 110) 2. Alcohol education (4 sessions) (n = 118)
Outcomes	**Physiological:** none **Non-physiological:** **Non-specific:** readiness to change alcohol consumption, percent days of alcohol abstinence, heavy drinking, percentage of drug-use days, and participant-to-partner violence in the previous year Follow-up at post-treatment, 6, 9, and 12 months
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer random number generator.
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	High risk	"The same therapists provided both treatments with no test of treatment discrimination, participants in both groups may have experienced similar levels of support and empathy."
Blinding (performance bias and detection bias) Assessors	High risk	Only self-reported outcomes available.
Incomplete outcome data (attrition bias) All outcomes	High risk	88% completed 4-session intervention, 74%, 69%, 59%, and 59% completed 3, 6, 9, and 12-month follow-up, with small differences between groups.
Selective reporting (reporting bias)	Unclear risk	No registration or protocol available.
Other bias	Unclear risk	No baseline characteristics reported; only non-physiological (self-reported) outcomes available; low recruitment.

Naar-King 2006

Study characteristics	
Methods	RCT
Participants	65 youth (ages 16 to 25 years) living with HIV in the USA
Interventions	1. MET (n = 32) 2. Waiting list (n = 33)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** number of standard drinks in one week and number of times used marijuana in one week (via Timeline Follow-Back) **Secondary:** none Follow-up at baseline, 3 months, and 6 months
Notes	The intervention is known as "Healthy Choices".

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	"Random numbers were generated by the project manager using an internet-based random number generator and were placed in sealed envelopes."
Allocation concealment (selection bias)	Low risk	"The data collector received sealed envelopes revealing randomisation status, which were opened after the baseline assessment so that the intervention sessions could be scheduled immediately for the treatment group."
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	Unclear risk	It is not stated whether assessors were blinded.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Attrition at 6 months was 23% for the whole sample. No reasons stated. Balanced. ITT analysis conducted.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the stated hypotheses.
Other bias	Unclear risk	Only self-reported outcomes. Differences between groups at baseline were not reported.

Parsons 2009

Study characteristics

Parsons 2009 *(Continued)*

Methods	RCT
Participants	143 men and women in the USA who are HIV-positive, on antiretroviral medication, and met criteria for hazardous drinking
Interventions	1. MI (8 sessions) + cognitive-behavioral skills building (n = 65) 2. Time- and content-equivalent educational condition (n = 78)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** standard drinks in the past and drinks per drinking day **Secondary:** medication adherence Follow-up at baseline, 3 months, and 6 months
Notes	Intervention is known as Project PLUS (Positive Living Through Understanding and Support).

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Urn randomisation procedures were used.
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	Unclear risk	Blinding of providers was not possible, but participants could have been blinded.
Blinding (performance bias and detection bias) Assessors	Unclear risk	It is not stated whether assessors were blinded.
Incomplete outcome data (attrition bias) All outcomes	Low risk	"An intent-to-treat analysis was used in which participants who completed the first follow-up assessments were analyzed according to their original assigned study condition irrespective of the number of sessions attended." Attrition was 9% at the 3-month follow-up and 10% at the 6-month follow-up with no significant difference in attrition between the 2 conditions. Reasons for attrition provided.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the stated hypotheses.
Other bias	Unclear risk	Only self-reported outcomes. Differences between groups at baseline were not reported.

Parsons 2014

Study characteristics

Parsons 2014 *(Continued)*

Methods	RCT
Participants	143 non-treatment-seeking young men who are gay and bisexual with recent unprotected anal intercourse and recreational drug use in the USA
Interventions	1. MI (4 sessions) (n = 73) 2. Educational control (4 sessions) (n = 70)
Outcomes	**Physiological:** none **Non-physiological:** **Non-specific:** unprotected anal intercourse with a casual partner, number of days of drug use Follow-up at baseline and at 3, 6, 9, and 12 months
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Urn randomisation procedures.
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	High risk	Personnel were not blinded.
Blinding (performance bias and detection bias) Assessors	Unclear risk	"In order to minimize potential bias created by having the same staff who assessed participants' risk behavior deliver the intervention, different staff members were used for TLFB assessment and delivery of MI or education sessions, and assessors were blind to participants' condition as randomization occurred at the end of the baseline assessment." Self-reported outcomes were assessed in interviews using a TLFB. It was unclear if participants knew that they were receiving MI.
Incomplete outcome data (attrition bias) All outcomes	High risk	86%, 76%, 78%, and 79% completed 3, 6, 9, and 12-month follow-up, respectively, with small differences between groups.
Selective reporting (reporting bias)	Unclear risk	No registration or protocol available.
Other bias	Unclear risk	No demographic baseline characteristics reported; only non-physiological (self-reported) outcomes available; no pre-planned sample size analysis reported.

Peterson 2006

Study characteristics

Peterson 2006 *(Continued)*

Methods	RCT
Participants	285 adolescents in the USA who were homeless, recruited from drop-in centres and from street intercept
Interventions	1. Brief MI (n = 92)* 2. Assessment at follow-up (n = 94) 3. Assessment only (n = 99)*
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** marijuana drug use days, other illicit drug use days **Secondary:** none
Notes	*These interventions were included in the comparison

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"(...) a two-step urn randomization on gender and ethnicity."
Allocation concealment (selection bias)	Unclear risk	Randomisation at central location.
Blinding (performance bias and detection bias) Patients and providers	Unclear risk	No blinding but the outcome measurements are not likely to be influenced by lack of blinding due to validation with physiological measurement.
Blinding (performance bias and detection bias) Assessors	Unclear risk	"Follow-up interviewers (...) were not blind to condition." The outcome measurements were not likely to be influenced by lack of blinding due to validation with physiological measurement.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	18% and 20% attrition at 1 and 3 months' follow-up, respectively. Balanced. Reasons for loss to follow-up not stated. Use of ITT analysis was stated by the authors but not reported.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Low risk	Urine samples collected at 3-month follow-up. There were no differences between groups at baseline. No additional sources of bias appear to be present.

Rohsenow 2004

Study characteristics

Methods	RCT
Participants	165 people in the USA who were cocaine-dependent

Rohsenow 2004 *(Continued)*

Interventions	1. MET followed by group coping skills (n = 44) 2. MET followed by drug education (n = 39) 3. Meditation relaxation followed by group coping skills (n = 44) 4. Mediation relaxation followed by drug education (n = 38)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** number of cocaine use days, percentage of days alcohol used **Secondary:** readiness to change (Cocaine Change Assessment Questionnaire). Data not reported. Retention in treatment (days treated in hospital (data not reported))
Notes	Results data are not available according to mail from Dr. Rohsenow 19 May 2010.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"Stratified randomisation balanced gender and cocaine use frequency."
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	Unclear risk	No blinding, but the outcome measurements were not likely to be influenced by lack of blinding due to validation with physiological measurement.
Blinding (performance bias and detection bias) Assessors	Low risk	"Research assistants blind to treatment condition conducted assessments."
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	10% attrition at 12-month follow-up. We do not know the attrition at 3 and 6 months. Reasons for attrition unclear. Unclear if attrition was balanced across groups. Use of ITT analysis was reported, but analyses were not reported for the full sample.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Unclear risk	Urine drug screens and collateral reports to check on self-report. The MET group reported drinking on more days at baseline.

Saitz 2007

Study characteristics

Methods	RCT
Participants	341 medical inpatients in the USA who were drinking risky amounts of alcohol
Interventions	1. Motivational counselling (30 min) (n = 172)

Saitz 2007 *(Continued)*

	2. Usual care (n = 169)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** drinking risky amounts, heavy drinking episodes, abstinence **Secondary:** readiness to change (Taking Steps Scale on the Stages of Change Readiness and Treatment Eagerness Scale) (data not reported)
Notes	Received alcohol assistance.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"(...) permuted block (size 8) randomisation procedure stratified by AUDIT score."
Allocation concealment (selection bias)	Low risk	"An off-site data management group generated assign-ments to control and intervention groups by using a per-muted block (size 8) randomization procedure stratified by AUDIT score and provided us the assignments in sealed opaque envelopes."
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	Unclear risk	It is not stated whether the assessors were blinded.
Incomplete outcome data (attrition bias) All outcomes	Low risk	At 3-month follow-up, the attrition was 17% in the usual care group and 24% in the brief intervention group. At 12 months, the attrition was 14% in the usual care group and 18% in the brief intervention group. Flow chart with reasons for attrition reported. It appears that ITT was performed ("...analyzed all patients in the groups to which they were randomly assigned".)
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Unclear risk	Baseline imbalances (gender, alcohol-attributable medical diagnoses, received alcohol assistance, drug use) existed despite randomisation. Biological breath tests were conducted at follow-up assessments.

Saitz 2014

Study characteristics

Methods	RCT
Participants	528 adults with weekly drug use who met with a primary care clinician
Interventions	1. MOTIV-Group (MI, 30 to 45 min, were offered a booster session (20 to 30 mins) (n = 177)* 2. Brief negotiated interview (contained MI) (n = 174)*

Saitz 2014 *(Continued)*

	3. No intervention control (n = 177)*
Outcomes	**Physiological:** **Primary:** none **Secondary:** drugs (any, amount, and decreases) by hair testing **Non-physiological:** **Primary:** percentage of days using the main drug determined at study entry **Secondary:** days using the main drug and using the main drug more than once, readiness to change, health utilisation, number of days using the main drug more than once (in past 90 days), any drug use, any drug or heavy alcohol use, use of ASSIST-specified drugs (marijuana, cocaine, opioids, sedatives, amphetamines, hallucinogens, inhalants), any injection drug use, ASSIST scores, any unsafe sex, and number of times Follow-up at 6 weeks and 6 months
Notes	*These interventions were included in the comparison. We calculated the weighted mean of the results of intervention groups 1 and 2 and compared them to no intervention control.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"The data coordinating center randomly assigned participants (...) via a central secure website using random permuted blocks of size 3 and 6 stratified by drug dependence and main drug."
Allocation concealment (selection bias)	Low risk	"The data coordinating center randomly assigned participants (...) via a central secure website using random permuted blocks of size 3 and 6 stratified by drug dependence and main drug."
Blinding (performance bias and detection bias) Patients and providers	Unclear risk	It was not possible to blind providers. Insufficient information about whether participants had been blinded.
Blinding (performance bias and detection bias) Assessors	Low risk	Self-reported and: "Hair samples providing a 90-day window of use were tested for drugs by enzyme-linked immunosorbent assay and gas chromatography mass spectrometry (Psychemedics)."
Incomplete outcome data (attrition bias) All outcomes	Low risk	"Of those randomized, 525 of 528 participants (99%) had 6-week follow-up data and 517 of 528 (98%) had 6-month follow-up data; there were no significant differences in follow-up between groups."
Selective reporting (reporting bias)	Low risk	All pre-planned outcomes were reported (NCT00876941).
Other bias	High risk	More patients in the intervention groups had outpatient addiction or mental health treatment counselling (31.6% versus 19.1% versus 17.0%).

Schaus 2009

Study characteristics

Schaus 2009 *(Continued)*

Methods	RCT
Participants	363 college students who screened positive for high-risk drinking in the USA.
Interventions	1. MI + a brochure (n = 181) 2. Control group receiving only the brochure (n = 182)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** typical BAC, peak BAC, average number of drinks per sitting, number of days with heavy episodic drinking, peak number of drinks in one sitting, average number of drinks per week, and number of times drunk in a typical week **Secondary:** readiness to change (Readiness to Change Questionnaire) Follow-up at 3, 6, 9, and 12 months
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"Subjects were block randomised using SPSS Version 15.0 (...) to either the control or intervention group, where the order of the interventions varied randomly within each block."
Allocation concealment (selection bias)	Unclear risk	"The group assignment was placed into a sealed envelope by the data manager and was not available to those recruiting subjects until after informed consent was obtained."
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	Unclear risk	It is not stated whether the assessors were blinded.
Incomplete outcome data (attrition bias) All outcomes	High risk	Percent lost to follow-up after 3, 6, 9, and 12 months were 24%, 42%, 41%, and 35%, respectively. Follow-up did not differ significantly between groups. Reasons for attrition not provided. ITT probably performed.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	High risk	Only self-reported outcomes. The variable "number of times drove after ≥ 3 drinks" was higher in the control group at baseline.

Sellman 2001

Study characteristics

Sellman 2001 *(Continued)*

Methods	RCT
Participants	125 people from New Zealand with mild to moderate alcohol dependence
Interventions	1. MET (n = 42)* 2. Non-directive reflective listening (n = 40) 3. No further counselling (n = 40)*
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** broke abstinence, exceeded national guidelines at least once, exceeded national guidelines six or more times, drank 10+ standard drinks at least once, drank 10+ standard drink six or more times **Secondary:** none
Notes	*These interventions were included in the comparison

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"(...) randomly constructed list of therapies."
Allocation concealment (selection bias)	Low risk	"An administrative person who was independent of the assessment and treatment of the study was contacted regarding the therapy to be undertaken."
Blinding (performance bias and detection bias) Patients and providers	Unclear risk	Blinding of providers was not possible, but participants could have been blinded.
Blinding (performance bias and detection bias) Assessors	Low risk	"A senior research assistant, who was blind to the treatment received, successfully completed follow-up."
Incomplete outcome data (attrition bias) All outcomes	Low risk	1% attrition at 6 months' follow-up. Attrition was balanced across conditions, but no reasons were reported. It is unclear whether ITT analysis was performed.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Low risk	Collateral to check on self-report. There were differences between groups at baseline for Global assessment scale (GAS) score. No additional sources of bias appear to be present.

Slesnick 2013

Study characteristics

Methods	RCT

Slesnick 2013 *(Continued)*

Participants	179 minor adolescents who were homeless with alcohol or drug use or dependence in the USA
Interventions	1. MI (4 sessions) (n = 61)* 2. Community Reinforcement Approach (14 sessions) (n = 57)* 3. Ecologically-Based Family Therapy (14 sessions) (n = 61)*
Outcomes	**Physiological:** **Primary:** urine-screens (cannabinoids, amphetamines, methamphetamines, phencyclidine, cocaine/crack, and opiate use) **Non-physiological:** **Primary:** percent days of drug and alcohol use Follow-up at 3, 6, 9, 12, and 24 months
Notes	*MI was compared with Community Reinforcement Approach or Ecologically-Based Family Therapy

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Urn randomisation, stratified by age, gender and ethnicity.
Allocation concealment (selection bias)	Low risk	"On-site computer using a locked file which could be accessed only after inputting the details of the participant."
Blinding (performance bias and detection bias) Patients and providers	High risk	"The participants were assigned to a treatment condition at the end of the assessment and were informed about their group."
Blinding (performance bias and detection bias) Assessors	High risk	"All data for the current analysis were collected using interview and self-administered questionnaires."
Incomplete outcome data (attrition bias) All outcomes	High risk	"Follow-up rates (percent of assessments completed) for adolescents ranged from 69% to 79% across 6 time points (3, 6, 9, 12, 18, and 24 months) and did not differ among treatment conditions (...) Therefore, missing data due to assessment non-completion were assumed to be missing at random."
Selective reporting (reporting bias)	Unclear risk	No registration or published protocol available.
Other bias	Unclear risk	No demographic baseline characteristics per group reported; physiological data were compared to urine screens and showed high agreement; no preplanned sample size analysis reported; no other risk of bias.

Slesnick 2015

Study characteristics

Methods	RCT

Slesnick 2015 *(Continued)*

Participants	270 adolescents and young adults in the USA who were homeless and met criteria for use of or dependence on psychoactive substances or alcohol disorder
Interventions	1. MET (Motivational Enhancement Therapy) (4 sessions within 6 months) (n = 86)* 2. Community Reinforcement Approach (14 sessions, approximately 60 min) (n = 93)* 3. Case Management (14 sessions, approximately 60 min) (n = 91)*
Outcomes	**Physiological:** **Primary:** urine-screens **Non-physiological:** **Primary:** percent days of any drug use except alcohol and tobacco, percent days of alcohol use, average standard ethanol content (SECs) **Secondary:** depressive symptoms, internalising and externalising problems, task-, emotion-, and avoidance-oriented coping, victimisation and homelessness Follow-up at 3, 6, and 12 months
Notes	*MET was compared with Community Reinforcement Approach or Case Management

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Use of a computerised randomisation program.
Allocation concealment (selection bias)	Low risk	"Treatment allocation was assigned by means of an on-site computer using a locked file which could be accessed only after inputting the details of the participant."
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding of participants and providers.
Blinding (performance bias and detection bias) Assessors	High risk	Self-reported questionnaires.
Incomplete outcome data (attrition bias) All outcomes	High risk	88% received the interventions, 75%, 76%, and 75% with follow-up at 3, 6, and 12 months, analysis of all participants and in the treated sample.
Selective reporting (reporting bias)	Unclear risk	No registration or protocol available.
Other bias	Low risk	No relevant baseline differences between groups; physiological data converged with questionnaires; no pre-planned sample size analysis reported; no other risk of bias.

Stein 2002

Study characteristics	
Methods	RCT
Participants	187 people in the USA who were AUDIT-positive for active injection drug use
Interventions	1. MI (2 sessions, 30 to 45 min) (n = 95) 2. Control (assessment only) (n = 92)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** number of drinking days **Secondary:** none
Notes	BRAINE study

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"Subjects were assigned to treatments using a randomisation schedule created with permuted blocks of eight assignments."
Allocation concealment (selection bias)	Unclear risk	"The data manager prepared the randomisation schedule before the first patient enrolled."
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	Low risk	"At each follow-up assessment, research assistants were blinded to the treatment condition of the subject."
Incomplete outcome data (attrition bias) All outcomes	Low risk	3% loss to follow-up at 6 months. Balanced. No reasons provided.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Unclear risk	Only self-reported outcomes. There were no differences between groups at baseline.

Stein 2009

Study characteristics	
Methods	RCT
Participants	198 people in the USA who used cocaine at least weekly and who were not in treatment

Stein 2009 *(Continued)*

Interventions	1. MI (4 sessions) (n = 97) 2. Assessment-only control group (n = 101) Each session lasted 20 to 40 minutes.
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** any reduction in cocaine use, more than 50% reduction, and abstinence **Secondary:** treatment attendance (inpatient therapy, attended NA or CA, any drug treatment) Follow-up at 6 months
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"Randomization and concealment were overseen by the study methodologist."
Allocation concealment (selection bias)	Unclear risk	"Randomization and concealment were overseen by the study methodologist."
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	Low risk	"Follow-up interviews were performed by research staff blinded to study conditions."
Incomplete outcome data (attrition bias) All outcomes	Low risk	ITT performed. Attrition was 19% at 6 months. Reasons not stated.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Unclear risk	Only self-reported outcomes. There were no differences between groups at baseline.

Stein 2010

Study characteristics

Methods	RCT
Participants	245 women in the USA who were incarcerated with hazardous drinking
Interventions	1. MI (2 sessions) (n = 125) 2. Assessment only (n = 120)

Stein 2010 *(Continued)*

Outcomes	**Physiological:** none **Non-physiological:** **Primary:** 90-day drinking (probability of an abstinent day, drinks per drinking day) using Timeline Follow-Back Follow-up at 1, 3, and 6 months
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"Randomization and concealment were overseen by the study methodologist (B.J.A.)."
Allocation concealment (selection bias)	Unclear risk	"Randomization and concealment were overseen by the study methodologist (B.J.A.)."
Blinding (performance bias and detection bias) Patients and providers	High risk	Participants and providers were not blinded to the interventions.
Blinding (performance bias and detection bias) Assessors	Low risk	"(...) research staff performing the assessments were blinded to the participant's assigned condition."
Incomplete outcome data (attrition bias) All outcomes	High risk	Attrition was 24% at 1 month, 21% at 3 months, and 21% at 6 months. Balanced. Not ITT analysis. No reasons reported.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Unclear risk	Only self-reported outcomes. There were no differences between groups at baseline.

Stein 2017

Study characteristics

Methods	RCT
Participants	226 non-treatment-seeking young adults who reported at least monthly binge-drinking and weekly marijuana use in the previous 3 months from the USA
Interventions	1. Active emerging adulthood MI with feedback to highlight the participant's substance use (5 sessions, approximately 20 to 30 min immediately at baseline and at 1, 3, 6, and 9-month follow-up assessments) (n = 110) 2. Health Education (5 sessions duration and timing was identical to 1.) (n = 116)
Outcomes	**Physiological:** none **Non-physiological:**

Stein 2017 *(Continued)*

	Primary: days of binge alcohol use, days marijuana use, days of dual use Follow-up at 1, 3, 6, 9, 12, and 15 months
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Random assignment software administrated by the research statistician with blocked randomisation.
Allocation concealment (selection bias)	Low risk	"Research assistants conducting study assessments were blind to the randomisation. Study interventionists retrieved group assignment just prior to meeting with each participant for their initial intervention session."
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding of participants and providers.
Blinding (performance bias and detection bias) Assessors	High risk	Self-reported outcomes in interviews; research staff performing the assessments were blinded to assigned condition.
Incomplete outcome data (attrition bias) All outcomes	High risk	"Follow-up rates were 86.3%, 78.8%, 76.6%, 71.7%, 71.2%, and 70.8% at 1, 3, 6, 9, 12, and 15 months, respectively."
Selective reporting (reporting bias)	High risk	Primary outcome of sexually transmitted infections planned in the protocol was not reported.
Other bias	Unclear risk	Only self-reported outcomes. No baseline characteristics per group reported; sample size and number of sessions differed from the protocol.

Stephens 2007

Study characteristics	
Methods	RCT
Participants	188 people from the USA who used marijuana
Interventions	1. Personalised feedback (utilising MI) (n = 62)* 2. Educational control (multimedia feedback) (n = 62)* 3. Delayed feedback (n = 64)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** days of marijuana use per week, periods smoked per day, dependence symptoms **Secondary:** motivation (Readiness to Change Questionnaire) (data not reported)

Stephens 2007 *(Continued)*

Notes	*These interventions were included in the comparison

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Used an urn randomisation program.
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	Unclear risk	No blinding, but the outcome measurements were not likely to be influenced by lack of blinding due to validation with physiological measurement.
Blinding (performance bias and detection bias) Assessors	Low risk	"(...) research staff (...) was not aware of assigned condition."
Incomplete outcome data (attrition bias) All outcomes	Low risk	Attrition was 5% at 7 weeks, 10% at 6 months, and 19% at 12 months' follow-up. Balanced across conditions. No reasons given for dropout. ITT analysis probably performed (missing data were replaced with baseline values).
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Low risk	Urine specimens were collected at each assessment point and analysed for the presence of drug metabolites via enzyme immunoassay tests. Differences between groups at baseline were not reported. No additional sources of bias appear to be present.

Stotts 2001

Study characteristics

Methods	RCT
Participants	105 men and women in the USA aged 18 to 50 who met criteria for cocaine dependence and were admitted to a university medical centre
Interventions	1. MI 2. Detox-only The group sizes were not reported. The detox-only condition was "(...) a multi component intervention consisting of daily visits, interaction with research assistants, education, and graphing and feedback of daily urine results, as well as bonus money and further treatment contingent on successful completion of the program."
Outcomes	**Physiological:** cocaine-positive urine samples **Non-physiological:** **Primary:** cocaine use

Stotts 2001 *(Continued)*

	Secondary: treatment retention (completion of detox programme); readiness to change (Processes of Change Scale)
Notes	We sent an email on 29 April 2010 requesting the group sizes. On 4 June we contacted Brad Lundahl, author of a systematic review for effect size information. He gave us effect size data.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"(...) randomly assigned (...)"
Allocation concealment (selection bias)	Unclear risk	"(...) randomly assigned (...)"
Blinding (performance bias and detection bias) Patients and providers	Low risk	No blinding, but most outcomes were physiological, also used to validate self-reports, and not likely to be influenced by lack of blinding.
Blinding (performance bias and detection bias) Assessors	Low risk	Insufficient information to know whether assessors were blinded. But most outcomes were physiological, also used to validate self-reports, and not likely to be influenced by lack of blinding.
Incomplete outcome data (attrition bias) All outcomes	High risk	Intention-to-treat analyses of the full sample (n =105) were conducted on completion of the detox programme. The number of participants randomised to each condition was not reported. Analysis of urine samples was conducted on 51 completers.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Low risk	Urinalysis to validate self-report. There were no differences between groups at baseline. No additional sources of bias appear to be present.

Stotts 2006

Study characteristics

Methods	Pilot RCT
Participants	31 males in the USA who used cocaine and sought treatment
Interventions	1. Two-session MI intervention with informative biological electroencephalographic event-related brain potentials (EEG/ERP) feedback (n = 17) 2. Minimal control condition: participants had two brief meetings with an experienced research assistant weekly over two weeks (n = 14)
Outcomes	**Physiological:** cocaine-positive urine screens **Non-physiological:** **Primary:** proportion of self-reported cocaine use days **Secondary:** readiness to change (URICA, data not reported)

Stotts 2006 *(Continued)*

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"Randomised".
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	Low risk	No blinding, but most outcomes were physiological, also used to validate self-reports, and not likely to be influenced by lack of blinding.
Blinding (performance bias and detection bias) Assessors	Low risk	"Post-treatment assessment was conducted at one week post-study by clinic staff blind to study condition."
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Only participants with data at both time points were analysed (27/31 = 13% attrition). Reasons for missing data not reported. ITT analysis not performed.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Low risk	EEG screening to validate self-report. There were no differences between groups at baseline. No additional sources of bias appear to be present.

Swogger 2016

Study characteristics

Methods	RCT
Participants	105 adults from the USA in a pre-trial jail diversion programme and with use of opiate(s), cocaine, or another illicit substance
Interventions	1. Brief MI with feedback (3 to 4 sessions, approximately 40 min, within 3 months after baseline assessment) in addition to standard care (n = 53) 2. Standard care (substance use meeting with assessment) (n = 52)
Outcomes	**Physiological:** breathalyser for recent alcohol consumption and a urine screen for THC, opiates, cocaine, amphetamines, and benzodiazepines **Non-physiological:** **Non-specific:** frequency of substance use, percent days abstinent, substance-use consequences, participation in non-study mental health and/or substance-use treatment Follow-up at 6 months
Notes	

Swogger 2016 *(Continued)*

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Participants were randomly assigned based on a random number generator.
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding of providers, unclear blinding of participants.
Blinding (performance bias and detection bias) Assessors	Low risk	Self-reported information on substance use was compared with physiological data (same interactions were found).
Incomplete outcome data (attrition bias) All outcomes	High risk	74.3% completed 6-month follow-up session.
Selective reporting (reporting bias)	Unclear risk	No study registration or published protocol available.
Other bias	Unclear risk	No sample size and clear definition of a primary endpoint. Physiological measures were used to validate self-report and stated the same interactions. There were no differences between groups at baseline. No additional sources of bias appear to be present.

Thush 2009

Study characteristics	
Methods	RCT
Participants	125 Dutch adolescents classified as being at risk
Interventions	1. MI plus information flyers (n = 61) 2. Information flyers only (n = 64)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** alcohol use **Secondary:** readiness to change using a readiness-to-change ruler (data not reported) Follow-up at 1 and 6 months
Notes	E-mail sent to Thush requesting raw outcome data on 28 May 2010. Thush replied immediately promising to look into it. They have computed a log transformed standardised alcohol-use index score out of six different correlated alcohol-use outcome measures. A reminder was sent on 30 August. An out-of-office reply informed that Thush had resigned.

Thush 2009 *(Continued)*

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"Randomly assigned".
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	Unclear risk	It is not stated whether assessors were blinded.
Incomplete outcome data (attrition bias) All outcomes	High risk	10% lost to follow-up at 1 month and 41% lost to follow-up at 6 months. Reasons not provided. Balanced at 1 month. Not known whether loss was balanced at 6 months. No ITT analysis performed.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Unclear risk	Only self-reported outcomes. Differences between groups at baseline were not reported.

UKATT 2005

Study characteristics	
Methods	Multisite RCT (7 sites)
Participants	742 UK clients with alcohol problems
Interventions	1. MET (3 sessions over 50 minutes) (n = 442) 2. Social behaviour and network therapy (8 sessions over 50 minutes) (n = 320) Follow-up at 8 and 12 weeks
Outcomes	**Physiological:** gamma-glutamyl transferase **Non-physiological:** **Primary:** days abstinent, number of drinks per drinking day, Leeds Dependence Questionnaire score, alcohol problems score **Secondary:** none
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement

UKATT 2005 *(Continued)*

Random sequence generation (selection bias)	Low risk	"The remote randomisation service at York used a computer "on line" to allocate consenting participants between therapy groups."
Allocation concealment (selection bias)	Unclear risk	"Treatment was concealed until allocation."
Blinding (performance bias and detection bias) Patients and providers	Low risk	No blinding, but most outcomes were physiological and also used to validate self-reports, and not likely to be influenced by lack of blinding.
Blinding (performance bias and detection bias) Assessors	Low risk	Assessors were blinded at 12 months but not at 3 months. Most outcomes were physiological, also used to validate self-reports, and not likely to be influenced by lack of blinding.
Incomplete outcome data (attrition bias) All outcomes	Low risk	7% attrition at 3-month follow-up and 17% attrition at 12-month follow-up. Balanced. Reasons provided. ITT analysis using last observation carried forward performed.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Low risk	Gamma GT used to check self-report. There were no differences between groups at baseline. No additional sources of bias appear to be present.

Wain 2011

Study characteristics	
Methods	RCT
Participants	75 veterans from the USA who were homeless, unemployed, met criteria for substance dependency, and who were being wait-listed for entry into a residential treatment programme
Interventions	1. MI omitting elements focused on providing feedback (1 session) (n = 41) 2. Standard interview (n = 34)
Outcomes	**Physiological:** gamma-glutamyl transferase **Non-physiological:** **Primary:** programme entry, length of stay **Secondary:** programme completion, graduation **Tertiary:** readiness to change, self-efficacy Follow-up at approximately 6 months
Notes	

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Computer-generated randomisation.

Wain 2011 *(Continued)*

Allocation concealment (selection bias)	Low risk	Screening interviewer and veteran were blind to treatment group.
Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding of providers.
Blinding (performance bias and detection bias) Assessors	High risk	Only self-reported outcomes, administered by unblinded interviewers.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Readiness to change and self-efficacy were assessed post-intervention, but no numbers were reported.
Selective reporting (reporting bias)	Unclear risk	No study registration or protocol available.
Other bias	Unclear risk	Small differences at baseline (more African Americans and more participants with alcohol use in the MI group), no sample size reported, no non-physiological outcomes provided. No additional sources of bias appear to be present.

Walitzer 2009

Study characteristics	
Methods	RCT
Participants	169 outpatients in the USA who used alcohol
Interventions	1. Motivational approach to facilitate Alcoholics Anonymous (AA) (n = 58)* 2. 12-step directive approach to facilitate AA (n = 53)* 3. Treatment as usual with no special emphasis on AA (n = 58) All conditions received 12 sessions
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** percentage of days abstinent, percentage of days heavy drinking via the Timeline Follow-Back **Secondary:** attendance at AA meetings
Notes	On 11 October 2010, we sent an email to Kim Walitzer (walitzer@ria.buffalo.edu) requesting data on retention in treatment; no reply. *These interventions were included in the comparison
Risk of bias	

Bias	Authors' judgement	Support for judgement

Walitzer 2009 *(Continued)*

Random sequence generation (selection bias)	Low risk	"Random assignment to conditions was conducted by the third author via urn randomisation (...)."
Allocation concealment (selection bias)	Unclear risk	"Random assignment to conditions was conducted by the third author via urn randomisation (...)." Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	Unclear risk	Blinding of providers was not possible, but participants could have been blinded.
Blinding (performance bias and detection bias) Assessors	Low risk	"Research interviewers were blind to intervention condition."
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	10% attrition on interview and 15% on questionnaire data. No reasons stated. Similar across conditions. Not ITT in primary analysis.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Low risk	Used collateral interviews to check on self-report. Differences between groups at baseline were not reported. No additional sources of bias appear to be present.

Walker 2006

Study characteristics	
Methods	Multisite RCT (4 sites)
Participants	97 adolescents in the USA
Interventions	1. 2-session MET (n = 47) 2. 3-month delayed condition (n = 50)
Outcomes	**Physiological:** none **Nonphysiological:** **Primary:** number of days of marijuana use **Secondary:** none
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"(...) randomly assigned."
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.

Walker 2006 *(Continued)*

Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	Unclear risk	"Baseline and 3-month follow-up assessments were administered by an audio-computer-assisted self-interviewing program." But "a different HE (health educator) was assigned to conduct the follow-up."
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Attrition was 5% overall at 3-month follow-up (9% in the MET group and 2% in the control group). Unbalanced across conditions. Reasons not reported. Stated use of ITT but reported only actual data.
Selective reporting (reporting bias)	High risk	Authors stated alcohol and other drugs as outcomes but reported only marijuana use in the results. Some results were only claimed as "not significant" but not reported explicitly.
Other bias	Unclear risk	Only self-reported outcomes. There were more whites in the immediate treatment group than in the delayed treatment group at baseline.

Walters 2009

Study characteristics	
Methods	RCT
Participants	279 college students in the USA who met criteria for heavy drinking
Interventions	1. Single MI session without feedback (MIO, n = 70)* 2. Single MI session with feedback (MIF, n = 73)* 3. Web feedback only (FBO, n = 67)* 4. Assessment only (AO, n = 69)*
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** drinks per week, estimated peak BAC **Secondary:** none
Notes	*1. and 2. were compared with 3. and 4.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"Randomization, stratified by sex and heavy-drinking frequency (i.e., one heavy episode in the past 2 weeks vs. more than one heavy episode), was completed automatically after the students entered their screening data."
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.

Walters 2009 *(Continued)*

Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	Unclear risk	It is not stated whether assessors were blinded.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	10% attrition at 3 months and 14% attrition at 6 months. Different across groups. No reasons. ITT not conducted.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Unclear risk	The feedback format varied (e.g. online, face-to-face) and MIO and MIF conditions varied in contact time because of the feedback component. There were no differences between groups at baseline.

White 2006

Study characteristics	
Methods	RCT
Participants	222 mandated college students in the USA
Interventions	1. Brief motivational interview (n = 180) 2. Written feedback only (n = 168)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** past month alcohol frequency, number of occasions of heavy episodic drinking, number of drinks and number of hours of drinking each day in a typical week in the last month, frequency of marijuana use in the past month **Secondary:** none Follow-up at 3 months
Notes	Secondary reference White 2007 reports the same study with further recruitment (n = 348). Follow-ups at 4 and 15 months.

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Randomly assigned by the flip of a coin.
Allocation concealment (selection bias)	Low risk	Randomly assigned by the flip of a coin.

White 2006 *(Continued)*

Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	Unclear risk	It is not stated whether assessors were blinded.
Incomplete outcome data (attrition bias) All outcomes	Low risk	5% lost to follow-up. Reasons not stated. Balanced. ITT analysis not conducted.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	High risk	Only self-reported outcomes but included the Social Desirability Scale. Participants in the BMI group were in an earlier college year and had higher RAPI scores than participants in the written feedback group at baseline.

Winhusen 2008

Study characteristics	
Methods	Multisite RCT (4 sites)
Participants	200 women in the USA who were pregnant and used substances
Interventions	1. 3-session MET (n = 102) 2. Treatment as usual (n = 98)
Outcomes	**Physiological:** urine toxicology **Non-physiological:** **Primary:** days of alcohol/drug use **Secondary:** readiness to change (URICA)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Used urn randomisation.
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias) Patients and providers	Low risk	No blinding, but most outcomes were physiological and also used to validate self-reports, and not likely to be influenced by lack of blinding.

Winhusen 2008 *(Continued)*

Blinding (performance bias and detection bias) Assessors	Low risk	Insufficient information to know whether assessors were blinded. Most outcomes were physiological, also used to validate self-reports, and not likely to be influenced by lack of blinding.
Incomplete outcome data (attrition bias) All outcomes	Low risk	14% attrition at 1-month follow-up and 20% attrition at 3 months. Balanced. Reasons for dropout stated. ITT was performed.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Unclear risk	Urine samples were collected and tested for opiates, cocaine, methamphetamines, benzodiazepines, and marijuana at screening, weekly during the active phase of the study phase, and at the two follow-up visits. The MET group used more cocaine and the TAU group used more marijuana at baseline. There were also baseline differences in age, ethnicity, education, and pressure to attend treatment.

Winters 2007

Study characteristics	
Methods	RCT
Participants	Students in the USA who were identified as using drugs in a school setting
Interventions	1. 2 sessions of MI with the adolescent only (n = 26) 2. Assessment-only control (n = 27)
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** number of alcohol use days, number of binge days, number of illicit drug use days **Secondary:** additional treatment Follow-up at 6 months
Notes	There was also a third group that received 2 sessions with the adolescent and one with the parent (n = 26). This group did not meet our inclusion criteria. 1 student in the control group dropped out, so each group in the analyses contains 26 students.

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	"(...) randomly assigned (...)"
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.
Blinding (performance bias and detection bias)	High risk	No blinding.

Winters 2007 *(Continued)*

Patients and providers		
Blinding (performance bias and detection bias) Assessors	Low risk	"An experienced research assistant, who was blind to treatment condition, completed the intake, 1 month, and 6 months follow-up interviews."
Incomplete outcome data (attrition bias) All outcomes	Low risk	1% attrition at 6-month follow-up.
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	High risk	"During the 6-months TSR interview, those in the BI–AP condition reported more additional treatment (27%) compared with those in the BI–A condition (16%)." Only self-report. There were no differences between groups at baseline.

Wood 2007

Study characteristics	
Methods	RCT (2x2 factorial design)
Participants	335 college students in the USA who met criteria for heavy drinking
Interventions	1. Brief MI (BMI) (n = 84)* 2. Alcohol Expectancy Challenge (AEC) (n = 87)* 3. BMI and AEC (n = 81) 4. Assessment only (n = 83)* AEC involved 2 sessions with a group discussion about alcohol expectancies in a simulated bar environment.
Outcomes	**Physiological:** none **Non-physiological:** **Primary:** number of drinks per week, number of heavy drinking episodes in the past 30 days, hangovers, blackouts, increased subjective tolerance **Secondary:** none
Notes	*1. vs. 2. and 1. vs. 4 were included in the comparison

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	"(...) randomized, separately by gender."
Allocation concealment (selection bias)	Unclear risk	Insufficient information to permit judgement.

Wood 2007 *(Continued)*

Blinding (performance bias and detection bias) Patients and providers	High risk	No blinding.
Blinding (performance bias and detection bias) Assessors	Unclear risk	It is not stated whether the assessors were blinded.
Incomplete outcome data (attrition bias) All outcomes	High risk	"Cumulative participant attrition was 18%, 25%, and 28% at 1, 3, and 6 month follow-up, respectively. Not balanced. 21 in the AEC group and 24 in the BMI-AEC group were dropped by design because it was not possible to schedule them for at least one of two group AEC sessions. ITT analysis was not performed."
Selective reporting (reporting bias)	Low risk	The published report included all expected outcomes based on the study hypotheses.
Other bias	Unclear risk	Only self-reported outcomes. There were no differences between groups at baseline.

AA: Alcoholics Anonymous; **ALT:** alanine transaminase; **ASSIST:** Alcohol, Smoking and Substance Involvement Screening Test; **AST:** aspartate aminotransferase; **AUDIT:** Alcohol Use Disorders Identification Test; **BAC:** blood alcohol concentration; **BAL:** blood alcohol level; **BMI:** brief motivational interviewing/intervention; **CA:** Cocaine Anonymous; **CBT:** cognitive behavioural therapy; **CDT:** carbohydrate-deficient transferrin; **DSM:** Diagnostic and Statistical Manual of Mental Disorders; **DUDIT:** Drug Use Disorders Identification Test; **GGT:** gamma-glutamyl transferase; **ITT:** intention-to-treat; **MCV:** mean corpuscular volume; **MET:** motivational enhancement therapy; **MI:** motivational interviewing; **min:** minute(s); **MMPI-Mac Scale:** Minnesota Multiphasic Personality Inventory-MacAndrew Alcoholism Scale; **NA:** Narcotics Anonymous; **OPI:** Opiate Treatment Index; **RAPI:** Rutgers Alcohol Problem Index; **RCT:** randomised controlled trial; **SD:** standard deviation; **SEC:** standard ethanol content; **TAU:** treatment as usual; **THC:** tetrahydrocannabinol; **TLFB:** Timeline Follow-Back; **URICA:** University of Rhode Island Change Assessment score

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

Study	Reason for exclusion
Acuff 2019	Secondary analysis of three RCTs.
Adamson 2001	Substance use was not an outcome.
Allen 2011	Quality conditions not fulfilled: not all sessions were recorded, no coding.
Aubrey 1998	No fidelity check using video or audio.
Baer 2001	No fidelity check using video or audio.
Bagoien 2013	Quality conditions not fulfilled: no audio/video recording of the sessions, no coding.
Baker 1993	Substance use was not an outcome.
Baker 2001	No fidelity check using video or audio.
Baker 2002	No fidelity check using video or audio.
Baker 2002b	Substance use was not an outcome.
Baker 2005	No fidelity check using video or audio.

Study	Reason for exclusion
Baker 2006	No fidelity check using video or audio.
Barrowclough 2000	No results reported. Ongoing study in 2000.
Bechdolf 2012	Quality conditions not fulfilled: no coding, no recording, no training described.
Beckham 2007	No fidelity check using video or audio.
Begun 2011	Quality conditions not described: no coding, no recording, no training described.
Bernstein 2005	No fidelity check using video or audio.
Blondell 2011	Quality conditions not fulfilled: no recording, no training, no coding.
Blow 2010	Quality conditions not described.
Bohnert 2016	Ineligible population: patients reported misuse of opioids.
Booth 1998	Substance use was not an outcome.
Borsari 2000	No fidelity check using video or audio.
Brown 2009	No fidelity check using video or audio.
Bruguera 2021	Quality conditions not fulfilled: no audio/video recording of the sessions; no coding.
Bucci 2010	Quality conditions not fulfilled: no recording, no coding.
Butler 2009	No fidelity check using video or audio.
Carey 2013	Quality conditions not fulfilled: no recording, no coding described. Training not sufficiently described.
Ceperich 2002	No data reported.
Ceperich 2011	Quality conditions not fullfilled: no coding, as tapes were erased after supervision.
Chartier 2015	No recording, no coding.
Chavez 2003	Substance use was not an outcome.
Christoff 2015	Quality conditions not fullfilled: no recording, no coding.
Clarke 2011	Quality conditons not fullfilled: no recording.
Clinton-Sherrod 2008	Substance abuse was not an outcome.
Clinton-Sherrod 2011	Quality conditions not fullfilled: no recording of the sessions, no coding.
Coriale 2019	Quality conditions not described: audio/video recording and fidelity check not described.
Corrigan 2005	Substance use was not an outcome.
Crane 2015	Ineligible population: not all participants drank alcohol.

Study	Reason for exclusion
D'Angelo 2005	No fidelity check using video or audio.
Daeppen 2011	Quality conditions not fullfilled: no coding.
Daley 1998	Substance use was not an outcome.
Davidson 2007	Did not compare MI with alternative. Both conditions received MI.
Davis 2003	No fidelity check using video or audio.
Dench 2000	Substance abuse was not an outcome.
Dent 2008	No fidelity check using video or audio. Main references to Miller and Rollnick are missing.
Dhital 2015	Quality conditions not fullfilled: no recording, no coding. Intervention included booklet, calorie wheel, and alcohol leaflet in addition to MI.
Diaz-Martinez 2011	Quality conditions not fulfilled: no coding.
Disney 2005	Substance abuse was not an outcome.
Dunn 2004	Substance abuse was not an outcome.
Easton 2000	Substance abuse was not an outcome.
Edwards 2006	No fidelity check using video or audio.
Eisenberg 2013	Ineligible comparator: both intervention groups received MI (MI with drug focus versus MI with traffic focus).
Field 2014	MI quality conditions not fullfilled: no coding.
Floyd 2007	No fidelity check using video or audio.
Gamage 2021	Quality conditions not described.
Garner 2017	Quality conditions not fulfilled: no recording and coding of the intervention sessions.
Gentilello 2001	Substance abuse was not an outcome (outcomes were injuries and traumas).
Gilder 2017	Ineligible population.
Ginsburg 2001	Substance abuse was not an outcome.
Goti 2010	No fidelity check using video or audio.
Grossbard 2010	Quality conditions not described: no recording, no coding, no training described.
Grow 2014	Quality conditions not fulfilled: no recording of all sessions, no coding.
Guan 2015	Quality conditions not fulfilled: no coding.
Handmaker 1999	No individuals who use substances.
Hasin 2012	Quality conditions not fullfilled: not clear whether recordings were made.

Study	Reason for exclusion
Haug 2004	Substance abuse was not an outcome.
Hayes 2007	No individuals who use substances.
Hickman 1999	No fidelity check using video or audio.
Hicks 1999	No fidelity check using video or audio.
Hulse 2003	Substance use was not an outcome.
Hurlocker 2021	Ineligible study design: feasibility and initial efficacy study, not an RCT.
Ingersoll 2013	Quality conditions not fullfilled: no coding. Intervention included MI and additional material such as videos, brochures, information about contraception.
Juarez 2006	No individuals who use substances.
Jungerman 2007	No fidelity check using video or audio.
Kelleher 2021	Ineligible study design: single-arm longitudinal feasibility study.
Kertesz 2021	A comment piece, not a study.
Kidorf 2005	Substance abuse was not an outcome.
Kidorf 2009	No fidelity check using video or audio.
Kinlock 2005	Substance abuse was not an outcome.
Kuchipudi 1990	No fidelity check using video or audio.
Kulesza 2010	Quality conditions not fullfilled: no recording, no coding.
Kumar 2021	Ineligible study design: pre-/post-test with control design, no randomisation.
Larimer 2001	No individuals who use substances.
Lindstrom 2015	Ineligible population: not all participants drank alcohol before.
Longabaugh 2001	No individuals who use substances.
Longabaugh 2009	No fidelity check using video or audio.
Lozano 2013	Quality conditions not fullfilled: no recording, no coding.
L'Engle 2014	Quality conditions not fullfilled: no recording, only in vivo observation, no coding, training not described.
Magill 2009	No fidelity check using video or audio.
Mahmood 2002	Substance abuse was not an outcome.
Marlatt 1998	No fidelity check using video or audio.
Martino 2000	No fidelity check using video or audio.

Study	Reason for exclusion
Mausbach 2007	Substance abuse was not an outcome.
McCambridge 2004	No fidelity check using video or audio.
McCambridge 2011	Quality conditions not fullfilled: no sufficient recording, no coding.
Mckee 2007	No fidelity check using video or audio.
McNally 2005	No fidelity check using video or audio.
Meli 2015	Quality conditions not described.
Monahan 2010	Secondary analysis: summary of the results of 2 RCTs
Monti 1999	No individuals who use substances.
Monti 2007	No individuals who use substances.
Morgenstern 2007	Did not compare MI with alternative intervention.
Morgenstern 2010	Ineligible study design.
Morgenstern 2021	Quality conditions not fulfilled: no coding.
Morken 2010	Quality conditions not fulfilled: no recording, no coding.
Mullins 2004	Substance abuse was not an outcome.
Murphy 2001	Does not compare MI with alternative intervention.
Murphy 2004	No fidelity check using video or audio.
Neff 2013	Quality conditions not fulfilled: intervention sessions were not recorded, only practice sessions.
Noknoy 2010	Quality conditions not fulfilled: no recordings of the sessions, no coding.
Norberg 2014	Ineligible comparator: MI was compared to MET.
Nyamathi 2010	Quality conditions not fulfilled: no recording, no fidelity assessment.
Nyamathi 2011	Quality conditions not described: no recording, no coding, no fidelity control was described.
Oliveira 2008	No fidelity check using video or audio.
Osterman 2012	Ineligible population: pregnant women and their alcohol use not described in sufficient detail.
Osterman 2014	Ineligible population: pregnant women and their consumption pattern not described in sufficient detail.
Owens 2016	Quality conditons not fullfilled: no coding.
Palm 2016	Quality conditions not fullfilled: no coding.
Parsons 2007	No fidelity check using video or audio.

Study	Reason for exclusion
Pedrelli 2020	Quality conditions not fullfilled: no coding.
Rendall-Mkosi 2013	Quality conditions not fulfilled: no recording, no coding.
Reyes-Rodriguez 2020	Quality conditions not fulfilled: no fidelity assessment.
Riggs 2015	Editorial piece, not a study.
Rubio 2014	Quality conditons not fullfilled: no coding.
Samet 2005	Substance abuse was not an outcome.
Sanchez-Craig 1996	No fidelity check using video or audio.
Saunders 1995	No fidelity check using video or audio.
Scott 2002	Substance abuse was not an outcome.
Sears 2006	Substance abuse was not an outcome.
Segatto 2011	Quality conditons not described.
Shestopal 2019	Quality conditons not fullfilled: no precise descripion of the intervention content, no fidelity assessment.
Shetty 2011	Quality conditons not fullfilled: no coding.
Sinha 2003	No fidelity check using video or audio.
Sinha 2022	Quality conditions not fulfilled: no recording of the sessions.
Soderstrom 2007	No individuals who use substances.
Sorsdahl 2015	Quality conditons not fullfilled: no recording, no coding.
Staton 2018	Quality conditions not described: fidelity procedures not described.
Staton-Tindall 2015	Ineligible outcome: the aim of the intervention was to reduce the HIV risk.
Stein 2006	Substance abuse was not an outcome.
Stein 2006a	Substance abuse was not an outcome.
Stein 2011	Quality conditons not fullfilled: no audio/video recording, no coding.
Stephens 2000	No fidelity check using video or audio.
Stewart 2016	Quality conditions not described: fidelity procedures not described.
Stuart 2013	Quality conditions not fulfilled: no training, no coding.
Swanson 1999	Substance abuse was not an outcome.
Tapert 2003	No individuals who use substances.

Study	Reason for exclusion
Teeters 2015	Secondary analysis of 3 RCTs (Murphy 2012, Borsari 2012, Martens 2013).
Terlecki 2010	Quality conditions not described: fidelity assessment not described.
Terlecki 2021	Quality conditions not described.
Thush 2007	No fidelity check using video or audio.
Tweedly 2012	Quality conditions not fulfilled: no coding.
Utter 2014	Quality conditions not fulfilled: no fidelity assessment.
Vanderburg 2003	Substance abuse was not an outcome.
Vederhus 2014	Quality conditions not described: fidelity procedures not described.
Villegas 2016	Secondary analysis of College-Based Alcohol Risk Reduction (CBARR) study; refers to RCTs and data from before 2010.
Wain 2006	Substance abuse was not an outcome.
Walters 2010	Ineligible population: probationers received intervention.
Wandera 2017	Quality conditions not fulfilled: no recording, no coding.
Ward 2015	Quality conditions not fulfilled: no recording, no coding.
Wertz 1994	No fidelity check using video or audio.
Whitten 2006	Substance abuse was not an outcome.
Wilson 2012a	Study stopped.
Wood 2010	Ineligible population: study population included parent-student dyads.
Woodall 2007	No fidelity check using video or audio.
Woolard 2013	Quality conditions not fulfilled: no coding.
Zahradnik 2009	Not acceptable drug (prescription drugs).
Zhang 2018	Ineligible comparator: comparison of Community Reinforcement Approach (CRA) versus MET versus Case Management.
Zule 2009	No fidelity check using video or audio.

MET: motivational enhancement therapy; **MI:** motivational interviewing; **RCT:** randomised controlled trial

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

ACTRN12611000135910

Methods	Interventional

ACTRN12611000135910 *(Continued)*

Participants	People who drink and are classified as being at high risk
Interventions	Brief interventions (START Brief Interventions)
Outcomes	Alcohol-related trauma
Notes	Published in a trial registry only; no results published

Blow 2012

Methods	RCT
Participants	Older adults with at-risk alcohol consumption in primary care settings
Interventions	Screening and brief intervention approach: 1) Clinician-delivered brief intervention 2) Enhanced usual care
Outcomes	Reducing alcohol consumption, especially reducing binge-drinking
Notes	Published only as a conference abstract

Corno 2011

Methods	RCT
Participants	Non-college-bound young adults, 17 to 20 years old
Interventions	Brief motivational interviewing (BMI)
Outcomes	Motivation and self-efficacy
Notes	Published only as a conference abstract

Dash 2021

Methods	RCT
Participants	Adolescents
Interventions	Motivational interviewing versus mindfulness
Outcomes	Therapeutic alliance, reducing problem drinking
Notes	Published only as a conference abstract

Dubertret 2010

Methods	
Participants	
Interventions	
Outcomes	
Notes	No study results, no publication.

Gaume 2020

Methods	RCT
Participants	38 male and female patients with alcohol-use disorder and moderate alcohol-associated hepatitis, aged 21 to 67 years
Interventions	1. Lactobacillus rhamnosus GG (LGG) 2. Placebo
Outcomes	Drinking per week, liver injury
Notes	Published only as a conference abstract

Gonzales 2019

Methods	
Participants	
Interventions	
Outcomes	
Notes	Published only as a conference research poster; information not accessible

Hides 2018

Methods	
Participants	
Interventions	
Outcomes	
Notes	Published only as a conference research poster; information not accessible

Horner 2010

Methods	
Participants	
Interventions	
Outcomes	
Notes	Full text not accessible

Hospital 2012

Methods	
Participants	
Interventions	
Outcomes	
Notes	Published only as a conference abstract; information not accessible

Ingesson 2022

Methods	RCT
Participants	Individuals with alcohol-use disorder
Interventions	1. Behavioral self-control training (BSCT) 2. Motivational enhancement therapy
Outcomes	Mean weekly alcohol consumption
Notes	Published only as a conference abstract

IRCT20140907019077N4

Methods	Interventional
Participants	Women of reproductive age
Interventions	Motivational interviewing-based behavior change model
Outcomes	Returning to opium addiction
Notes	Published in a trial registry only; no results published

Jaiswal 2018

Methods	
Participants	
Interventions	
Outcomes	
Notes	Published only as a conference abstract; information not accessible

Lakshmana 2016

Methods	
Participants	
Interventions	
Outcomes	
Notes	Full text not accessible

Lauckner 2021

Methods	
Participants	
Interventions	
Outcomes	
Notes	Published as an online-only poster abstract; information not accessible

Lee 2015

Methods	RCT
Participants	Hispanics with heavy drinking
Interventions	1. Motivational interviewing adapted to address social stressors 2. No intervention
Outcomes	Drinking
Notes	Published only as an abstract

Lopes 2018

Methods	Randomised clinical trial
Participants	Individuals with disorders for the use of psychotropic substances
Interventions	Motivational interview
Outcomes	
Notes	No full-text publication accessible

Lunny 2012

Methods	Open-label trial
Participants	Patients with alcohol dependence and non-treatment seeking
Interventions	1. Motivational interviewing (MI) 2. No intervention
Outcomes	Measures of alcohol use (30-day Timeline Follow Back) and motivation for change (the Stages of Change Readiness and Treatment Eagerness Scale - SOCRATES)
Notes	Published only as an abstract

Lygidakis 2013

Methods	
Participants	
Interventions	
Outcomes	
Notes	Full text not accessible

Martens 2011

Methods	RCT
Participants	College students who reported at least one heavy drinking episode in the previous month
Interventions	1. Protective Behavioral Strategies Feedback (PBSF) 2. Personalised Normative Feedback (PNF) 3. Education-Only (EO)
Outcomes	Number of drinks per week, peak number of drinks over the past 30 days, alcohol-related problems

Martens 2011 *(Continued)*

Notes	Full text not accessible

Mastroleo 2010a

Methods	RCT
Participants	College students with heavy drinking
Interventions	1. Assessment control 2. MI-supervised BASICS 3. MI-unsupervised BASICS
Outcomes	Heavy drinking
Notes	Published only as an abstract

Mastroleo 2022

Methods	RCT
Participants	Veterans with heavy drinking and post-traumatic stress disorder (PTSD)
Interventions	1. Brief motivational interviewing (BMI) with Prolonged Exposure for Primary Care (PE-PC) (PC-TIME) 2. Treatment as usual (TAU)
Outcomes	Drinking and PTSD symptom severity
Notes	Published only as a conference abstract

NCT00229983

Methods	RCT
Participants	Adolescents with use of alcohol, marijuana, or other drugs 6 times in the previous 3 months
Interventions	1. MET (3 sessions, 60 minutes) 2. Enhanced standard care
Outcomes	Primary: quantity and days of substance use (previous 90 days) Secondary: driving while intoxicated or riding with an intoxicated person; amount of completed substance-use treatment (previous 90 days); substance-related risk behaviours (previous 90 days)
Notes	Actual study completion date: May 2010. Last update posted: 7 October 2016. No results published

NCT01143792

Methods	RCT
Participants	Youth aged 14 to 20
Interventions	Behavioral: Community Reinforcement Approach (CRA) + HIV prevention Behavioral: Case Management + HIV Prevention Behavioral: Motivational Enhancement Therapy (MET) + HIV prevention
Outcomes	Primary: substance use (time frame: 3 months, 6 months, 12 months), percentage of substance-use days in prior 3 months
Notes	

NCT01616212

Methods	RCT
Participants	Youth with referral for a 1st or 2nd 'minor in possession' (of alcohol or less than an ounce of marijuana) offense
Interventions	1. Motivational enhancement therapy for adolescents, 'Parenting Wisely' for parents 2. Motivational enhancement therapy for adolescents 3. Drug education for adolescents, 'Parenting Wisely' for parents 4. Drug education for adolescents
Outcomes	Primary: adolescent substance use and related problems Secondary: dysfunctional discipline practices
Notes	Actual primary completion date: September 2014 (final data collection date for primary outcome measure). Last update posted: 10 October 2014. No results posted

NCT01621334

Methods	Interventional, randomised, parallel assignment
Participants	Adult men, 18 years and older
Interventions	MET versus education
Outcomes	Primary: treatment seeking Secondary: self-report of intimate partner violence and substance use
Notes	Published in a trial registry only; no results published

NCT02159391

Methods	RCT
Participants	Trauma patients who have tested positive on alcohol and/or other substance abuse drugs tests.
Interventions	1. Brief MI 2. No intervention control
Outcomes	Primary: risk behaviour Secondary: alcohol and other drug consumption, motivation to change, risk perception, general health Other: risk-taking and impulsive behaviour, real-life decision-making
Notes	Estimated study completion date: December 2016. Last update posted: 25 September 2015. No results posted. Unknown status

NCT02409888

Methods	RCT
Participants	140 participants with alcohol use or dependence
Interventions	1. MET 2. CBT 3. FC assessment (quarterly assessments across broad domains of functioning) 4. IB assessment (semi-annual assessments specific to their alcohol and other drug use)
Outcomes	Alcohol use: percent days abstinent, mean drinks per drinking day, and percent heavy drinking days for study months 3 to 15 (one year post-treatment).
Notes	Study completed on 31 July 2021. No results posted. Last update posted: 19 August 2021

NTR2420

Methods	
Participants	Judicially-supervised people classified as criminal and addicted
Interventions	
Outcomes	Entering addiction treatment and treatment dropout
Notes	Study not found

NTR2710

Methods	

NTR2710 *(Continued)*

Participants	Adolescents aged 14 to 21 years with frequent cannabis use
Interventions	Wiet-Check, the Dutch version of the Adolescent Cannabis Check-Up (ACCU)
Outcomes	Cannabis use
Notes	Full-text study publication not found

NTR3182

Methods	Randomised, controlled, stepped-wedge, cluster trial
Participants	Outpatients with substance use disorders
Interventions	Integrated dual diagnosis treatment (IDDT)
Outcomes	Days of substance use at follow-up, 12 months after IDDT implementation
Notes	Published in a trial registry only; no results published

NTR3730

Methods	
Participants	Adolescents
Interventions	Moti-4
Outcomes	Cannabis use
Notes	

Parry 2019

Methods	RCT
Participants	Patients on antiretroviral therapy (ART)
Interventions	1. Motivational interviewing/problem-solving therapy alcohol-focused intervention 2. Treatment as usual (TAU)
Outcomes	Volume of alcohol consumed, improving/maintaining (ART) adherence and viral load
Notes	Published only as a conference abstract

Puentes 2016

Methods	RCT
Participants	Patients from 3 Level I trauma centres
Interventions	1. Brief advice 2. Brief motivational intervention (BMI) 3. BMI + booster with personalised feedback
Outcomes	Alcohol use, marijuana use
Notes	Published only as a research poster; no full-text publication

Pujam 2022

Methods	RCT
Participants	People who fulfill the International Classification of Diseases - 10th Revision (ICD-10) criteria of alcohol dependence or score above the cutoff on AUDIT (Alcohol Use Disorders Identification Test)
Interventions	Intervention 1: mindfulness-based relapse prevention Intervention 2: motivational enhancement therapy Control intervention 1: treatment as usual
Outcomes	Change in mindfulness, craving, emotion regulation and readiness for change
Notes	

Rinker 2017

Methods	RCT
Participants	College students with heavy drinking
Interventions	1. In-person MI-delivered injunctive norms personalised normative feedback (MIPNF) 2. Computer-based injunctive norms PNF (PNF) 3. Attention-control feedback (control)
Outcomes	Alcohol quantity and alcohol-related problems
Notes	Published only as a conference abstract

Rose 2013

Methods	RCT
Participants	Incarcerated women

Rose 2013 *(Continued)*

Interventions	1. Brief motivational interviewing (BMI) 2. Treatment as usual (TAU)
Outcomes	Levels of substance use, treatment-seeking
Notes	Published only as a conference abstract

Sander 2012

Methods	
Participants	
Interventions	
Outcomes	
Notes	Published only as a conference abstract; information not accessible

Sawant 2016

Methods	RCT
Participants	American Indians and Alaska Natives (AI/AN) adolescents
Interventions	1. BA + PFR (brief advice and a personalised feedback report) 2. BA + PFR + MI 3. BA + PFR + MI + boost (6-months post-intervention booster session)
Outcomes	Substance use
Notes	Published only as a conference abstract

Tate 2010

Methods	RCT
Participants	Veterans
Interventions	1. Health-focused motivational intervention (HMI) 2. Time and content equivalent health education (HE) condition 3. Treatment as usual
Outcomes	Daily alcohol and substance use, percentage days abstinent
Notes	Published only as a conference abstract

Whiteside 2011

Methods	
Participants	
Interventions	
Outcomes	
Notes	Published only as a conference abstract; information not accessible

CBT: cognitive behavioural therapy; **MI:** motivational interviewing; **MET:** motivational enhancement therapy; **RCT:** randomised controlled trial

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

CTRI/2019/08/020530

Study name	Effect of a brief motivational intervention in reducing alcohol consumption in the emergency department
Methods	RCT
Participants	Injured emergency department patients who had been drinking within six hours before their injury
Interventions	1. MET 2. Treatment as usual
Outcomes	Primary • Alcohol-related negative consequences • Readiness to change behaviour • Quality of life at 3 months Secondary: quality of life at 6 months
Starting date	01 October 2019 (date of first enrolment)
Contact information	Dr Rajesh Kumar, rajesh.nur@aiimsrishikesh.edu.in
Notes	Not yet recruiting. Last refreshed on 24 November 2021.

CTRI/2022/06/043527

Study name	Usefulness of screening and brief intervention in patient with alcohol use disorder who are on opioid agonist treatment
Methods	Randomised controlled trial
Participants	People on opioid agonist treatment
Interventions	Screening and brief intervention (SBI) versus wait list

CTRI/2022/06/043527 *(Continued)*

Outcomes	Primary: change in the Alcohol Use Disorder Identification Test (AUDIT) score between the control and intervention group from baseline and at the end of follow-up Secondary • Proportion of patients transition from moderate to low risk • Number of days of drug use • Cumulative days of abstinence in the last 3 months • Change in frequency of heavy drinking • Adherence to buprenorphine
Starting date	01 July 2022
Contact information	www.ctri.nic.in/Clinicaltrials/pmaindet2.php?trialid=67862
Notes	

IRCT20151103024866N13

Study name	Investigating the Effect of Motivational-Enhancement Therapy, on the Pattern of Drug Use
Methods	RCT
Participants	Addicted women who have recently given birth
Interventions	1. MET (4 sessions, 45 minutes) 2. No intervention control
Outcomes	Change in the pattern of drug use (Time point: before the intervention and two weeks after the intervention is completed.)
Starting date	23 August 2018 (date of first enrolment)
Contact information	Katayon Alidousti, nmf@kmu.ac.ir
Notes	Last refreshed on: 29 January 2019. Recruitment status complete.

KCT0004748

Study name	Effect of early intervention based on motivational interviewing for high risk drinker: a randomized controlled trial
Methods	RCT
Participants	886 outpatients who visited a department of a general hospital in Korea with an AUDIT-K screening test of 6/10 or higher in women or men
Interventions	1. Early intervention based on motivational interviewing (feedback, MI interview, reinforcement) (10 to 15 minutes) 2. Feedback and educational material (3 to 5 minutes)

KCT0004748 *(Continued)*

Outcomes	Primary: alcohol consumption over the last week (measured by TLFB) Secondary • Alcohol consumption for the last week (measured by TLFB) • Drinking behavior over the last month (measured by AUDIT-C)
Starting date	2 March 2020
Contact information	Soo Kyung Min, +82-2-2258-7583, The Catholic University of Korea
Notes	Not yet recruiting. Last refreshed on: 24 February 2020. Anticipated study completion date: 30 June 2021

NCT04147520

Study name	Reducing Hazardous Alcohol Use in Social Networks Using Targeted Intervention: 21 Rising
Methods	RCT
Participants	Member (≥ 18 years) of the class of 2021 or 2021.5 at the site university
Interventions	1. Brief MI (1 session, 60 minutes) 2. No-intervention control
Outcomes	Primary: alcohol use, average number of drinks per week in the past 30 days, average number of alcohol consequences in the past 30 days, count of alcohol consequences in the past 30 days
Starting date	7 October 2019
Contact information	Nancy_Barnett@brown.edu
Notes	Estimated primary completion date: 31 December 2021 (final data collection date for primary outcome measure). Last update posted: 2 August 2021

NCT04345302

Study name	Brief motivational therapy versus usual care for alcohol use disorders in primary care
Methods	Parallel-group, single-blinded, randomised clinical trial
Participants	Adults, 20 years and older with alcohol use problem
Interventions	Brief motivational therapy versus usual care
Outcomes	Primary: change in the Drinks per Drinking Day (DDD) Secondary: • Change in the alcohol use pattern • Abstinence days • Change in the negative consequences of alcohol use • Change in the severity of the dependency

NCT04345302 *(Continued)*

	• Change in the motivation for change
Starting date	1 November 2021
Contact information	clinicaltrials.gov/ct2/show/NCT04345302
Notes	

NCT04822168

Study name	Effects of remote motivational enhancement & MySafeRx on post-detox engagement in B/N treatment (MySafeRx)
Methods	Randomised controlled trial
Participants	Adults, 18 years and older, with opioid-use disorder
Interventions	MySafeRx™ versus standard care
Outcomes	Primary: effect of remote motivational enhancement (RME) sessions on early engagement in B/N (buprenorphine/naloxone) treatment Secondary: • Proportion of days engaged in dosing of B/N during first 2 weeks • Opioid-related deaths • Illicit opioid use measured by urine toxicology screening
Starting date	31 December 2021
Contact information	clinicaltrials.gov/ct2/show/NCT04822168
Notes	

NCT04881500

Study name	Impact of a brief motivational intervention including counter-marketing arguments with a population of patients with moderate to severe alcohol use disorders who are followed up on an outpatient basis (primary care or addictology) (DEPREV_Phase 3)
Methods	Prospective, controlled, randomised, open-label study
Participants	People with moderate to severe alcohol use disorders
Interventions	Experimental: motivational interview Active comparator: routine care
Outcomes	Primary: ability of participants to control their own alcohol consumption Secondary: • Evaluation of quality of life • Severity of alcohol use disorders

NCT04881500 *(Continued)*

	• Evaluation of severity of alcohol use disorders • Limitation of alcohol consumption • Evaluation of alcohol use • Craving assessment
Starting date	11 January 2022
Contact information	
Notes	

NCT04998045

Study name	Feasibility and Acceptability of a Substance Use Screening and Brief Intervention for Youth Living With HIV in Kenya
Methods	Interventional study type: single group assignment
Participants	Youth living with HIV
Interventions	Brief motivational interviewing (BMI)
Outcomes	Substance use assessed by the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST)
Starting date	1 July 2021
Contact information	clinicaltrials.gov/ct2/show/record/NCT04998045
Notes	

NCT05010187

Study name	Preventing Alcohol Misuse and Consequences in Vulnerable Women
Methods	RCT
Participants	70 heavy-drinking females that identify as sexual minority women
Interventions	1. MI 2. Health coaching
Outcomes	Primary • Feasibility of intervention (rates of enroling after eligibility; attendance after randomisation) • Acceptability of intervention Secondary • Alcohol use quantity • Typical number of drinks per week • Alcohol consequences

NCT05010187 *(Continued)*

Starting date	October 2023
Contact information	Alyssa L Norris, PhD, 401-793-8398, alyssa.norris@lifespan.org
Notes	

NCT05489068

Study name	Adapting intake procedures to improve treatment delivery in addiction treatment
Methods	Effectiveness-implementation hybrid type I design
Participants	Adults seeking treatment for alcohol or other drug use at one of two outpatient addiction treatment programmes
Interventions	Behavioral: motivational interviewing at intake (MII) Behavioral: intake as usual (IAU) Experimental: motivational interviewing at intake (MII) Active comparator: intake as usual (IAU)
Outcomes	Primary • Number of participants who attended the first outpatient treatment programme session based on electronic medical record review • Number of treatment sessions attended during the three-month outpatient treatment programme based on electronic medical record review • Number of participants who completed the three-month outpatient treatment programme based on electronic medical record review Secondary • Change from baseline in client readiness to enter treatment on the University of Rhode Island Change Assessment Scale (URICA) at 1 hour post-intake • Score on therapeutic alliance on the Working Alliance Inventory (WAI) at 1-hour post-intake
Starting date	16 March 2022
Contact information	clinicaltrials.gov/ct2/show/record/NCT05489068
Notes	

CBT: cognitive behavioural therapy; **MET:** motivational enhancement therapy; **MI:** motivational interviewing; **RCT:** randomised controlled trial; **TLFB:** Timeline Follow-Back

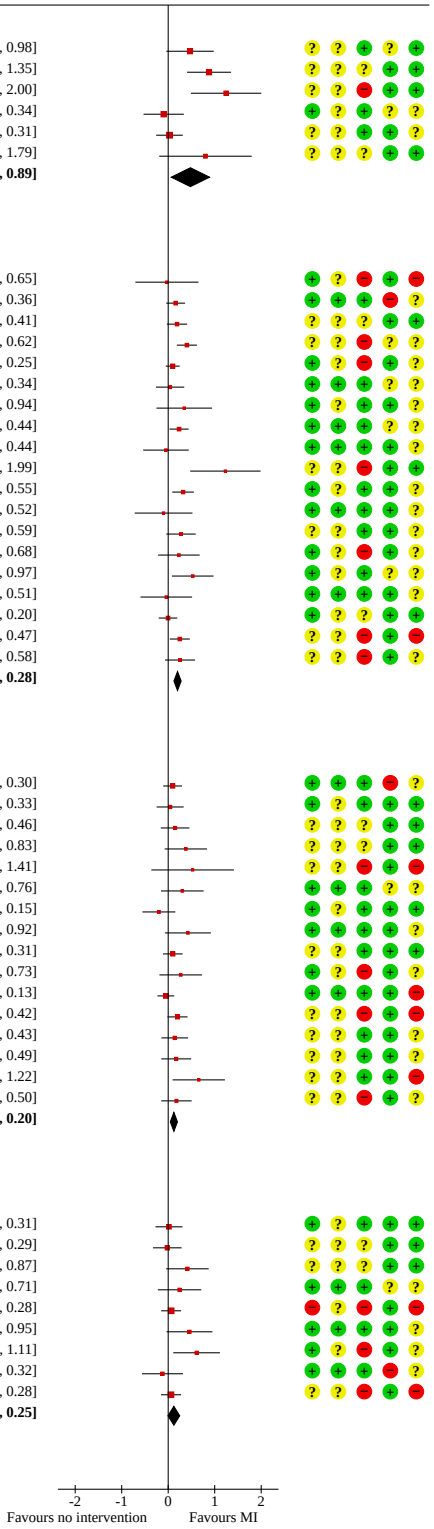
DATA AND ANALYSES

Comparison 1. Motivational interviewing versus no intervention

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.1 Extent of substance use	33		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.1.1 Post-intervention	6	471	Std. Mean Difference (IV, Random, 95% CI)	0.48 [0.07, 0.89]
1.1.2 Short-term follow-up	19	3351	Std. Mean Difference (IV, Random, 95% CI)	0.20 [0.12, 0.28]
1.1.3 Medium-term follow-up	16	3137	Std. Mean Difference (IV, Random, 95% CI)	0.12 [0.05, 0.20]
1.1.4 Long-term follow-up	9	1525	Std. Mean Difference (IV, Random, 95% CI)	0.12 [-0.00, 0.25]
1.2 Readiness to change	5	1495	Std. Mean Difference (IV, Random, 95% CI)	0.05 [-0.11, 0.22]
1.3 Retention in treatment	2	427	Std. Mean Difference (IV, Random, 95% CI)	0.26 [-0.00, 0.52]

Analysis 1.1. Comparison 1: Motivational interviewing versus no intervention, Outcome 1: Extent of substance use

Study or Subgroup	Std. Mean Difference	SE	No intervention Total	MI Total	Weight	Std. Mean Difference IV, Random, 95% CI
1.1.1 Post-intervention						
Ball 2007a	0.47	0.26	29	34	17.6%	0.47 [-0.04 , 0.98]
Connors 2002	0.878	0.241	36	40	18.3%	0.88 [0.41 , 1.35]
Kelly 2000	1.245	0.386	16	16	13.3%	1.25 [0.49 , 2.00]
Morgenstern 2017	-0.097	0.221	41	41	19.1%	-0.10 [-0.53 , 0.34]
Stein 2002	0.028	0.146	92	95	21.6%	0.03 [-0.26 , 0.31]
Stotts 2006	0.801	0.507	14	17	10.0%	0.80 [-0.19 , 1.79]
Subtotal (95% CI)			**228**	**243**	**100.0%**	**0.48 [0.07 , 0.89]**
Heterogeneity: Tau² = 0.18; Chi² = 19.85, df = 5 (P = 0.001); I² = 75%						
Test for overall effect: Z = 2.27 (P = 0.02)						
1.1.2 Short-term follow-up						
Bell 2007	-0.028	0.346	15	32	1.2%	-0.03 [-0.71 , 0.65]
Borsari 2012	0.161	0.103	188	194	8.9%	0.16 [-0.04 , 0.36]
Carey 2006	0.19	0.111	81	81	8.1%	0.19 [-0.03 , 0.41]
Carey 2011	0.402	0.11	174	164	8.2%	0.40 [0.19 , 0.62]
Carroll 2006a	0.097	0.076	178	173	12.2%	0.10 [-0.05 , 0.25]
Dermen 2011	0.041	0.155	39	36	5.1%	0.04 [-0.26 , 0.34]
Feldstein 2007	0.345	0.305	15	40	1.6%	0.34 [-0.25 , 0.94]
Gaume 2014	0.234	0.105	182	180	8.7%	0.23 [0.03 , 0.44]
Kay-Lambkin 2009	-0.048	0.25	30	35	2.3%	-0.05 [-0.54 , 0.44]
Kelly 2000	1.23	0.386	16	16	1.0%	1.23 [0.47 , 1.99]
Marijuana Treatment Project 2004	0.32	0.118	148	146	7.5%	0.32 [0.09 , 0.55]
Martin 2008	-0.099	0.317	20	20	1.5%	-0.10 [-0.72 , 0.52]
Mastroleo 2010	0.276	0.161	82	74	4.8%	0.28 [-0.04 , 0.59]
Morgenstern 2009	0.23	0.228	80	70	2.7%	0.23 [-0.22 , 0.68]
Murphy 2010	0.528	0.228	39	41	2.7%	0.53 [0.08 , 0.97]
Naar-King 2006	-0.041	0.283	26	25	1.8%	-0.04 [-0.60 , 0.51]
Peterson 2006	-0.004	0.102	99	92	9.0%	-0.00 [-0.20 , 0.20]
Schaus 2009	0.25	0.11	182	181	8.2%	0.25 [0.03 , 0.47]
Wood 2007	0.255	0.165	81	76	4.6%	0.26 [-0.07 , 0.58]
Subtotal (95% CI)			**1675**	**1676**	**100.0%**	**0.20 [0.12 , 0.28]**
Heterogeneity: Tau² = 0.01; Chi² = 24.50, df = 18 (P = 0.14); I² = 27%						
Test for overall effect: Z = 5.04 (P < 0.00001)						
1.1.3 Medium-term follow-up						
Borsari 2012	0.095	0.103	187	195	13.0%	0.10 [-0.11 , 0.30]
Brown 2010	0.042	0.148	92	92	6.6%	0.04 [-0.25 , 0.33]
Carey 2006	0.148	0.157	81	81	5.9%	0.15 [-0.16 , 0.46]
Connors 2002	0.38	0.232	36	40	2.8%	0.38 [-0.07 , 0.83]
Copeland 2001	0.525	0.453	55	62	0.7%	0.53 [-0.36 , 1.41]
Dermen 2011	0.303	0.234	39	36	2.7%	0.30 [-0.16 , 0.76]
Emmen 2005	-0.2	0.181	62	61	4.5%	-0.20 [-0.55 , 0.15]
Kay-Lambkin 2009	0.424	0.252	30	35	2.4%	0.42 [-0.07 , 0.92]
Marsden 2006	0.099	0.108	176	166	11.9%	0.10 [-0.11 , 0.31]
Morgenstern 2009	0.27	0.234	80	70	2.7%	0.27 [-0.19 , 0.73]
Saitz 2014	-0.05	0.092	177	351	15.9%	-0.05 [-0.23 , 0.13]
Schaus 2009	0.2	0.11	182	181	11.5%	0.20 [-0.02 , 0.42]
Stein 2002	0.141	0.146	92	95	6.8%	0.14 [-0.15 , 0.43]
Stein 2009	0.173	0.164	92	95	5.4%	0.17 [-0.15 , 0.49]
Winters 2007	0.657	0.287	26	26	1.8%	0.66 [0.09 , 1.22]
Wood 2007	0.177	0.167	72	72	5.3%	0.18 [-0.15 , 0.50]
Subtotal (95% CI)			**1479**	**1658**	**100.0%**	**0.12 [0.05 , 0.20]**
Heterogeneity: Tau² = 0.00; Chi² = 15.75, df = 15 (P = 0.40); I² = 5%						
Test for overall effect: Z = 3.13 (P = 0.002)						
1.1.4 Long-term follow-up						
Brown 2010	0.017	0.148	92	92	13.9%	0.02 [-0.27 , 0.31]
Carey 2006	-0.019	0.157	81	81	12.7%	-0.02 [-0.33 , 0.29]
Connors 2002	0.414	0.233	36	40	6.7%	0.41 [-0.04 , 0.87]
Dermen 2011	0.244	0.238	39	33	6.4%	0.24 [-0.22 , 0.71]
Freyer-Adam 2008	0.064	0.109	155	184	20.9%	0.06 [-0.15 , 0.28]
Kay-Lambkin 2009	0.458	0.252	30	35	5.8%	0.46 [-0.04 , 0.95]
Morgenstern 2009	0.61	0.256	80	70	5.7%	0.61 [0.11 , 1.11]
Murphy 2012	-0.123	0.225	60	54	7.1%	-0.12 [-0.56 , 0.32]
Schaus 2009	0.06	0.11	182	181	20.7%	0.06 [-0.16 , 0.28]
Subtotal (95% CI)			**755**	**770**	**100.0%**	**0.12 [-0.00 , 0.25]**
Heterogeneity: Tau² = 0.01; Chi² = 10.27, df = 8 (P = 0.25); I² = 22%						
Test for overall effect: Z = 1.88 (P = 0.06)						



Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Incomplete outcome data (attrition bias)
(D) Selective reporting (reporting bias)

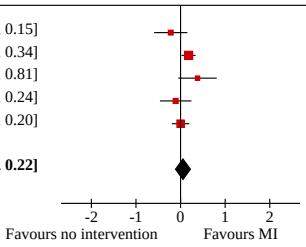
Analysis 1.1. (Continued)

(B) Allocation concealment (selection bias)
(C) Incomplete outcome data (attrition bias)
(D) Selective reporting (reporting bias)
(E) Other bias

Analysis 1.2. Comparison 1: Motivational interviewing versus no intervention, Outcome 2: Readiness to change

Study or Subgroup	Std. Mean Difference	SE	No intervention Total	MI Total	Weight	Std. Mean Difference IV, Random, 95% CI	Risk of Bias A B C D E
Brown 2010	-0.22	0.19	92	92	13.9%	-0.22 [-0.59 , 0.15]	+ ? + + +
Carroll 2006a	0.18	0.08	178	173	32.2%	0.18 [0.02 , 0.34]	+ ? − + ?
Emmen 2005	0.38	0.22	62	61	11.3%	0.38 [-0.05 , 0.81]	+ ? + + +
Freyer-Adam 2008	-0.11	0.18	249	225	15.0%	-0.11 [-0.46 , 0.24]	− ? − + −
Schaus 2009	0	0.1	182	181	27.7%	0.00 [-0.20 , 0.20]	? ? − + −
Total (95% CI)			**763**	**732**	**100.0%**	**0.05 [-0.11 , 0.22]**	

Heterogeneity: Tau² = 0.02; Chi² = 7.67, df = 4 (P = 0.10); I² = 48%
Test for overall effect: Z = 0.63 (P = 0.53)
Test for subgroup differences: Not applicable

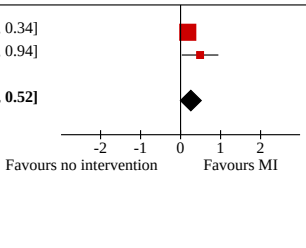


Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Incomplete outcome data (attrition bias)
(D) Selective reporting (reporting bias)
(E) Other bias

Analysis 1.3. Comparison 1: Motivational interviewing versus no intervention, Outcome 3: Retention in treatment

Study or Subgroup	Std. Mean Difference	SE	No intervention Total	MI Total	Weight	Std. Mean Difference IV, Random, 95% CI	Risk of Bias A B C D E
Carroll 2006a	0.18	0.08	178	173	75.2%	0.18 [0.02 , 0.34]	+ ? − + ?
Connors 2002	0.488	0.233	36	40	24.8%	0.49 [0.03 , 0.94]	? ? ? + +
Total (95% CI)			**214**	**213**	**100.0%**	**0.26 [-0.00 , 0.52]**	

Heterogeneity: Tau² = 0.02; Chi² = 1.56, df = 1 (P = 0.21); I² = 36%
Test for overall effect: Z = 1.93 (P = 0.05)
Test for subgroup differences: Not applicable



Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Incomplete outcome data (attrition bias)
(D) Selective reporting (reporting bias)
(E) Other bias

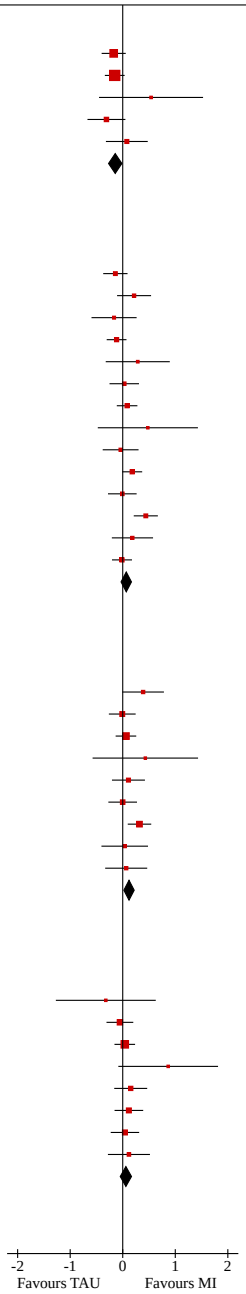
Comparison 2. Motivational interviewing versus treatment as usual

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
2.1 Extent of substance use	20		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
2.1.1 Post-intervention	5	976	Std. Mean Difference (IV, Random, 95% CI)	-0.14 [-0.27, -0.02]
2.1.2 Short-term follow-up	14	3066	Std. Mean Difference (IV, Random, 95% CI)	0.07 [-0.03, 0.17]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
2.1.3 Medium-term follow-up	9	1624	Std. Mean Difference (IV, Random, 95% CI)	0.12 [0.02, 0.22]
2.1.4 Long-term follow-up	8	1449	Std. Mean Difference (IV, Random, 95% CI)	0.06 [-0.05, 0.17]
2.2 Readiness to change	2	150	Std. Mean Difference (IV, Random, 95% CI)	0.06 [-0.27, 0.39]
2.3 Retention in treatment	5	1295	Std. Mean Difference (IV, Random, 95% CI)	-0.09 [-0.34, 0.16]

Analysis 2.1. Comparison 2: Motivational interviewing versus treatment as usual, Outcome 1: Extent of substance use

Study or Subgroup	Std. Mean Difference	SE	Treatment as usual Total	MI Total	Weight	Std. Mean Difference IV, Random, 95% CI	Risk of Bias A B C D E
2.1.1 Post-intervention							
Ball 2007b	-0.172	0.117	159	144	30.5%	-0.17 [-0.40 , 0.06]	+ ? + + −
Carroll 2009	-0.152	0.096	222	214	45.3%	-0.15 [-0.34 , 0.04]	+ ? − + ?
Kavanagh 2004	0.539	0.505	12	13	1.6%	0.54 [-0.45 , 1.53]	+ ? ? − −
Marín-Navarrete 2017	-0.31	0.184	64	51	12.3%	-0.31 [-0.67 , 0.05]	+ + + + ?
Walker 2006	0.078	0.203	50	47	10.1%	0.08 [-0.32 , 0.48]	? ? ? − ?
Subtotal (95% CI)			**507**	**469**	**100.0%**	**-0.14 [-0.27 , -0.02]**	
Heterogeneity: Tau² = 0.00; Chi² = 3.90, df = 4 (P = 0.42); I² = 0%							
Test for overall effect: Z = 2.21 (P = 0.03)							
2.1.2 Short-term follow-up							
Ball 2007b	-0.14	0.118	156	135	9.0%	-0.14 [-0.37 , 0.09]	+ ? + + −
Bazargan-Hejazi 2005	0.216	0.165	151	144	6.1%	0.22 [-0.11 , 0.54]	− − − + −
Berman 2010	-0.165	0.219	52	35	4.1%	-0.17 [-0.59 , 0.26]	− − − − −
Carroll 2009	-0.117	0.096	222	214	10.9%	-0.12 [-0.31 , 0.07]	+ ? − + ?
D'Amico 2008	0.286	0.311	20	22	2.3%	0.29 [-0.32 , 0.90]	? ? − + ?
D'Amico 2018	0.029	0.143	86	113	7.3%	0.03 [-0.25 , 0.31]	+ ? + + ?
Field 2020	0.083	0.1	200	203	10.5%	0.08 [-0.11 , 0.28]	+ + + ? +
Kavanagh 2004	0.478	0.486	12	13	1.0%	0.48 [-0.47 , 1.43]	+ ? ? − −
Marín-Navarrete 2017	-0.04	0.174	65	49	5.7%	-0.04 [-0.38 , 0.30]	+ + + + ?
Mertens 2014	0.18	0.097	173	190	10.8%	0.18 [-0.01 , 0.37]	? + + − ?
Miller 2003	-0.008	0.139	104	104	7.6%	-0.01 [-0.28 , 0.26]	+ ? ? ? ?
Monti 2016	0.439	0.117	161	141	9.1%	0.44 [0.21 , 0.67]	+ ? + ? ?
Walitzer 2009	0.185	0.2	50	51	4.7%	0.18 [-0.21 , 0.58]	+ ? ? + +
Winhusen 2008	-0.014	0.097	98	102	10.8%	-0.01 [-0.20 , 0.18]	+ ? + + ?
Subtotal (95% CI)			**1550**	**1516**	**100.0%**	**0.07 [-0.03 , 0.17]**	
Heterogeneity: Tau² = 0.01; Chi² = 23.15, df = 13 (P = 0.04); I² = 44%							
Test for overall effect: Z = 1.33 (P = 0.18)							
2.1.3 Medium-term follow-up							
Brown 2015	0.388	0.202	50	50	6.1%	0.39 [-0.01 , 0.78]	+ + − − ?
D'Amico 2018	-0.009	0.13	111	127	14.8%	-0.01 [-0.26 , 0.25]	+ ? + + ?
Field 2020	0.061	0.1	200	203	25.1%	0.06 [-0.13 , 0.26]	+ + + ? +
Kavanagh 2004	0.43	0.512	12	13	1.0%	0.43 [-0.57 , 1.43]	+ ? ? − −
Maisto 2001	0.109	0.16	85	73	9.8%	0.11 [-0.20 , 0.42]	+ + ? + +
Miller 2003	-0.001	0.139	104	104	13.0%	-0.00 [-0.27 , 0.27]	+ ? ? ? ?
Monti 2016	0.319	0.114	166	149	19.3%	0.32 [0.10 , 0.54]	+ ? + ? ?
Swogger 2016	0.038	0.226	39	39	4.9%	0.04 [-0.40 , 0.48]	+ ? − ? ?
Walitzer 2009	0.066	0.204	50	49	6.0%	0.07 [-0.33 , 0.47]	+ ? ? + +
Subtotal (95% CI)			**817**	**807**	**100.0%**	**0.12 [0.02 , 0.22]**	
Heterogeneity: Tau² = 0.00; Chi² = 7.47, df = 8 (P = 0.49); I² = 0%							
Test for overall effect: Z = 2.39 (P = 0.02)							
2.1.4 Long-term follow-up							
Alderson 2020	-0.322	0.485	23	17	1.3%	-0.32 [-1.27 , 0.63]	+ + − + ?
D'Amico 2018	-0.054	0.13	114	122	17.7%	-0.05 [-0.31 , 0.20]	+ ? + + ?
Field 2020	0.039	0.1	200	203	29.8%	0.04 [-0.16 , 0.23]	+ + + ? +
Kavanagh 2004	0.865	0.484	12	13	1.3%	0.86 [-0.08 , 1.81]	+ ? ? − −
Maisto 2001	0.152	0.16	85	73	11.7%	0.15 [-0.16 , 0.47]	+ + ? + +
Miller 2003	0.117	0.139	104	104	15.4%	0.12 [-0.16 , 0.39]	+ ? ? ? ?
Saitz 2007	0.042	0.138	146	141	15.7%	0.04 [-0.23 , 0.31]	? + + + ?
Walitzer 2009	0.118	0.204	44	48	7.2%	0.12 [-0.28 , 0.52]	+ ? ? + +
Subtotal (95% CI)			**728**	**721**	**100.0%**	**0.06 [-0.05 , 0.17]**	
Heterogeneity: Tau² = 0.00; Chi² = 4.80, df = 7 (P = 0.68); I² = 0%							
Test for overall effect: Z = 1.10 (P = 0.27)							

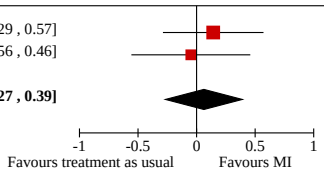


Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Incomplete outcome data (attrition bias)
(D) Selective reporting (reporting bias)
(E) Other bias

Analysis 2.2. Comparison 2: Motivational interviewing versus treatment as usual, Outcome 2: Readiness to change

Study or Subgroup	Std. Mean Difference	SE	MI Total	Treatment as usual Total	Weight	Std. Mean Difference IV, Random, 95% CI
Berman 2010	0.142	0.219	35	52	58.3%	0.14 [-0.29 , 0.57]
Wain 2011	-0.049	0.259	24	39	41.7%	-0.05 [-0.56 , 0.46]
Total (95% CI)			**59**	**91**	**100.0%**	**0.06 [-0.27 , 0.39]**

Heterogeneity: Tau² = 0.00; Chi² = 0.32, df = 1 (P = 0.57); I² = 0%
Test for overall effect: Z = 0.37 (P = 0.71)
Test for subgroup differences: Not applicable

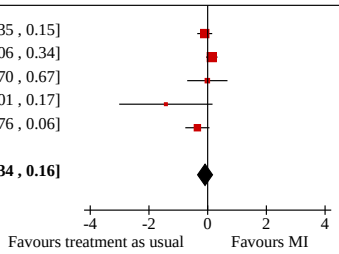


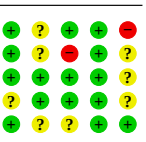
Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Incomplete outcome data (attrition bias)
(D) Selective reporting (reporting bias)
(E) Other bias

Analysis 2.3. Comparison 2: Motivational interviewing versus treatment as usual, Outcome 3: Retention in treatment

Study or Subgroup	Std. Mean Difference	SE	Control Total	MI Total	Weight	Std. Mean Difference IV, Random, 95% CI
Ball 2007b	-0.1	0.13	159	144	31.0%	-0.10 [-0.35 , 0.15]
Carroll 2009	0.14	0.1	222	214	35.5%	0.14 [-0.06 , 0.34]
Marín-Navarrete 2017	-0.011	0.35	66	54	10.5%	-0.01 [-0.70 , 0.67]
Saitz 2007	-1.424	0.811	169	172	2.4%	-1.42 [-3.01 , 0.17]
Walitzer 2009	-0.35	0.21	47	48	20.6%	-0.35 [-0.76 , 0.06]
Total (95% CI)			**663**	**632**	**100.0%**	**-0.09 [-0.34 , 0.16]**

Heterogeneity: Tau² = 0.04; Chi² = 8.39, df = 4 (P = 0.08); I² = 52%
Test for overall effect: Z = 0.69 (P = 0.49)
Test for subgroup differences: Not applicable



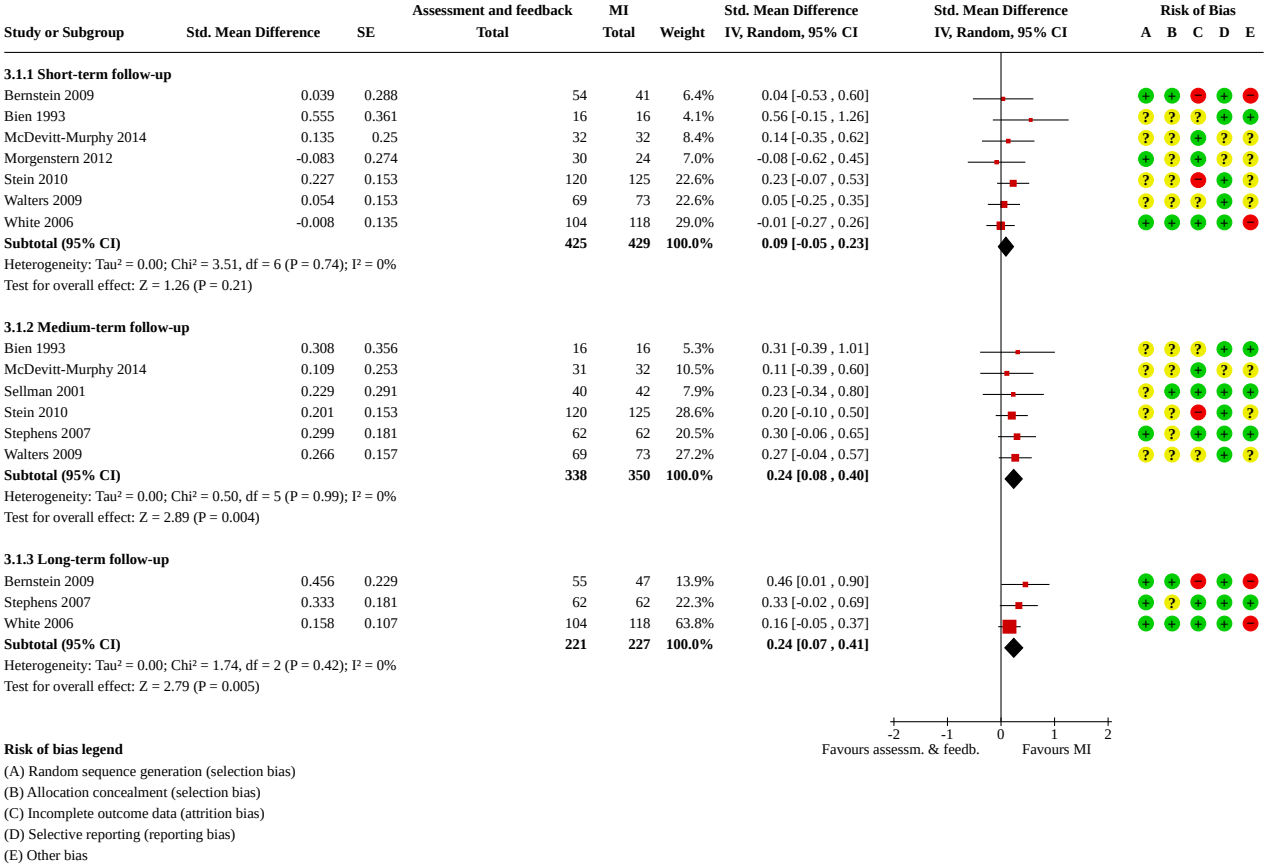


Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Incomplete outcome data (attrition bias)
(D) Selective reporting (reporting bias)
(E) Other bias

Comparison 3. Motivational interviewing versus assessment and feedback

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
3.1 Extent of substance use	9		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
3.1.1 Short-term follow-up	7	854	Std. Mean Difference (IV, Random, 95% CI)	0.09 [-0.05, 0.23]
3.1.2 Medium-term follow-up	6	688	Std. Mean Difference (IV, Random, 95% CI)	0.24 [0.08, 0.40]
3.1.3 Long-term follow-up	3	448	Std. Mean Difference (IV, Random, 95% CI)	0.24 [0.07, 0.41]

Analysis 3.1. Comparison 3: Motivational interviewing versus assessment and feedback, Outcome 1: Extent of substance use



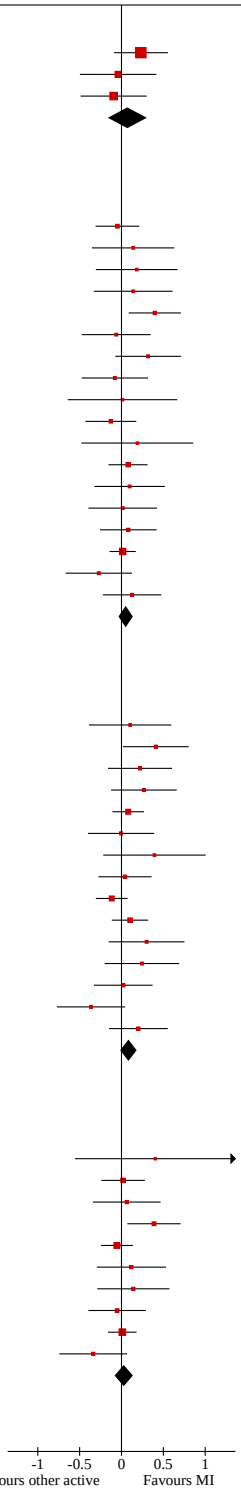
Comparison 4. Motivational interviewing versus other active intervention

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
4.1 Extent of substance use	24		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
4.1.1 Post-intervention	3	338	Std. Mean Difference (IV, Random, 95% CI)	0.07 [-0.15, 0.29]
4.1.2 Short-term follow-up	18	2795	Std. Mean Difference (IV, Random, 95% CI)	0.05 [-0.03, 0.13]
4.1.3 Medium-term follow-up	15	2352	Std. Mean Difference (IV, Random, 95% CI)	0.08 [-0.01, 0.17]
4.1.4 Long-term follow-up	10	1908	Std. Mean Difference (IV, Random, 95% CI)	0.03 [-0.07, 0.13]
4.2 Readiness to change	5	988	Std. Mean Difference (IV, Random, 95% CI)	0.15 [-0.00, 0.30]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
4.3 Retention in treatment	12	1945	Std. Mean Difference (IV, Random, 95% CI)	-0.04 [-0.23, 0.14]

Analysis 4.1. Comparison 4: Motivational interviewing versus other active intervention, Outcome 1: Extent of substance use

Study or Subgroup	Std. Mean Difference	SE	Other intervention Total	MI Total	Weight	Std. Mean Difference IV, Random, 95% CI	Risk of Bias A B C D E
4.1.1 Post-intervention							
Aharonovich 2017	0.233	0.164	75	74	46.3%	0.23 [-0.09 , 0.55]	+ ? + − −
Anton 2005	-0.04	0.233	41	39	22.9%	-0.04 [-0.50 , 0.42]	? ? + ? +
Kadden 2007	-0.094	0.201	54	55	30.8%	-0.09 [-0.49 , 0.30]	+ ? ? + +
Subtotal (95% CI)			**170**	**168**	**100.0%**	**0.07 [-0.15 , 0.29]**	
Heterogeneity: Tau² = 0.00; Chi² = 1.88, df = 2 (P = 0.39); I² = 0%							
Test for overall effect: Z = 0.62 (P = 0.53)							
4.1.2 Short-term follow-up							
Barnett 2007	-0.049	0.133	113	112	8.9%	-0.05 [-0.31 , 0.21]	+ ? ? + ?
Borsari 2005	0.14	0.251	30	34	2.5%	0.14 [-0.35 , 0.63]	? ? − + ?
Carroll 2006b	0.182	0.249	33	34	2.5%	0.18 [-0.31 , 0.67]	? ? ? + +
Chanut 2007	0.14	0.24	27	24	2.7%	0.14 [-0.33 , 0.61]	+ ? ? + ?
Colby 2018	0.398	0.159	82	80	6.2%	0.40 [0.09 , 0.71]	+ ? + − ?
De Gee 2014	-0.063	0.21	53	45	3.6%	-0.06 [-0.47 , 0.35]	+ ? − − ?
Dieperink 2014	0.318	0.2	68	70	3.9%	0.32 [-0.07 , 0.71]	+ + + ? ?
Kadden 2007	-0.079	0.202	50	55	3.8%	-0.08 [-0.47 , 0.32]	+ ? ? + +
Kahler 2004	0.012	0.334	24	24	1.4%	0.01 [-0.64 , 0.67]	? ? + + ?
Mackiewicz Seghete 2022	-0.127	0.155	86	77	6.5%	-0.13 [-0.43 , 0.18]	+ ? − ? ?
Martino 2006	0.189	0.341	15	22	1.3%	0.19 [-0.48 , 0.86]	+ ? + + −
McCambridge 2008	0.078	0.119	162	164	11.1%	0.08 [-0.16 , 0.31]	? + + + +
Parsons 2014	0.097	0.215	62	61	3.4%	0.10 [-0.32 , 0.52]	+ ? − ? ?
Slesnick 2013	0.015	0.209	48	45	3.6%	0.01 [-0.39 , 0.42]	+ + − ? ?
Slesnick 2015	0.082	0.173	70	66	5.2%	0.08 [-0.26 , 0.42]	+ + − ? +
UKATT 2005	0.014	0.08	293	393	24.5%	0.01 [-0.14 , 0.17]	+ ? + + +
Walitzer 2009	-0.271	0.202	51	51	3.8%	-0.27 [-0.67 , 0.12]	+ ? ? + +
Wood 2007	0.127	0.178	87	84	4.9%	0.13 [-0.22 , 0.48]	? ? − + ?
Subtotal (95% CI)			**1354**	**1441**	**100.0%**	**0.05 [-0.03 , 0.13]**	
Heterogeneity: Tau² = 0.00; Chi² = 12.95, df = 17 (P = 0.74); I² = 0%							
Test for overall effect: Z = 1.26 (P = 0.21)							
4.1.3 Medium-term follow-up							
Borsari 2005	0.104	0.251	30	34	3.1%	0.10 [-0.39 , 0.60]	? ? − + ?
Chanut 2007	0.41	0.2	27	24	4.8%	0.41 [0.02 , 0.80]	+ ? ? + ?
De Wildt 2002	0.222	0.195	77	86	5.0%	0.22 [-0.16 , 0.60]	? ? + + −
Dieperink 2014	0.268	0.2	61	59	4.8%	0.27 [-0.12 , 0.66]	+ + + ? ?
Feldstein Ewing 2021	0.08	0.096	220	218	16.0%	0.08 [-0.11 , 0.27]	+ ? + − ?
Kadden 2007	-0.005	0.202	54	55	4.7%	-0.01 [-0.40 , 0.39]	+ ? ? + +
Kahler 2004	0.394	0.312	21	21	2.1%	0.39 [-0.22 , 1.01]	? ? + + ?
Mackiewicz Seghete 2022	0.042	0.162	86	77	7.0%	0.04 [-0.28 , 0.36]	+ ? − ? ?
MATCH 1993	-0.116	0.097	164	168	15.8%	-0.12 [-0.31 , 0.07]	+ ? + ? +
McCambridge 2008	0.102	0.111	162	164	13.0%	0.10 [-0.12 , 0.32]	? + + + +
Parsons 2014	0.3	0.231	55	54	3.7%	0.30 [-0.15 , 0.75]	+ ? − ? ?
Slesnick 2013	0.244	0.227	46	39	3.8%	0.24 [-0.20 , 0.69]	+ + − ? ?
Slesnick 2015	0.021	0.179	64	62	5.9%	0.02 [-0.33 , 0.37]	+ + − ? +
Walitzer 2009	-0.364	0.208	48	49	4.5%	-0.36 [-0.77 , 0.04]	+ ? ? + +
Wood 2007	0.202	0.179	55	72	5.9%	0.20 [-0.15 , 0.55]	? ? − + ?
Subtotal (95% CI)			**1170**	**1182**	**100.0%**	**0.08 [-0.01 , 0.17]**	
Heterogeneity: Tau² = 0.00; Chi² = 16.05, df = 14 (P = 0.31); I² = 13%							
Test for overall effect: Z = 1.80 (P = 0.07)							
4.1.4 Long-term follow-up							
Alderson 2020	0.404	0.489	23	17	1.1%	0.40 [-0.55 , 1.36]	+ + − + ?
Barnett 2007	0.019	0.133	113	112	12.8%	0.02 [-0.24 , 0.28]	+ ? ? + ?
Kadden 2007	0.063	0.206	48	52	5.8%	0.06 [-0.34 , 0.47]	+ ? ? + +
Mackiewicz Seghete 2022	0.388	0.162	86	77	9.1%	0.39 [0.07 , 0.71]	+ ? − ? ?
MATCH 1993	-0.055	0.097	164	168	21.5%	-0.06 [-0.25 , 0.14]	+ ? + ? +
Parsons 2014	0.118	0.211	54	59	5.6%	0.12 [-0.30 , 0.53]	+ ? − ? ?
Slesnick 2013	0.142	0.22	46	46	5.2%	0.14 [-0.29 , 0.57]	+ + − ? ?
Slesnick 2015	-0.052	0.175	69	67	7.9%	-0.05 [-0.39 , 0.29]	+ + − ? +
UKATT 2005	0.01	0.087	261	351	25.2%	0.01 [-0.16 , 0.18]	+ ? + + +
Walitzer 2009	-0.338	0.207	47	48	5.8%	-0.34 [-0.74 , 0.07]	+ ? ? + +
Subtotal (95% CI)			**911**	**997**	**100.0%**	**0.03 [-0.07 , 0.13]**	
Heterogeneity: Tau² = 0.00; Chi² = 10.11, df = 9 (P = 0.34); I² = 11%							
Test for overall effect: Z = 0.52 (P = 0.60)							



Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Incomplete outcome data (attrition bias)
(D) Selective reporting (reporting bias)
(E) Other bias

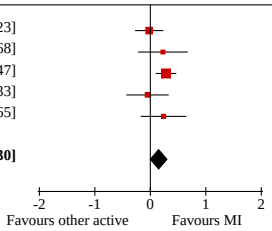
Analysis 4.1. (Continued)

(C) Incomplete outcome data (attrition bias)
(D) Selective reporting (reporting bias)
(E) Other bias

Analysis 4.2. Comparison 4: Motivational interviewing versus other active intervention, Outcome 2: Readiness to change

Study or Subgroup	Std. Mean Difference	SE	Other active intervention Total	MI Total	Weight	Std. Mean Difference IV, Random, 95% CI	Std. Mean Difference IV, Random, 95% CI	Risk of Bias A B C D E
Barnett 2007	-0.02	0.13	113	112	25.7%	-0.02 [-0.27 , 0.23]		+ ? ? + ?
De Gee 2014	0.227	0.229	61	58	10.0%	0.23 [-0.22 , 0.68]		+ ? - - ?
Feldstein Ewing 2021	0.282	0.095	226	222	39.3%	0.28 [0.10 , 0.47]		+ ? + - ?
Kadden 2007	-0.051	0.195	50	55	13.3%	-0.05 [-0.43 , 0.33]		+ ? ? + +
Murphy 2010	0.238	0.21	45	46	11.7%	0.24 [-0.17 , 0.65]		+ ? + ? ?
Total (95% CI)			**495**	**493**	**100.0%**	**0.15 [-0.00 , 0.30]**		

Heterogeneity: Tau² = 0.01; Chi² = 4.96, df = 4 (P = 0.29); I² = 19%
Test for overall effect: Z = 1.96 (P = 0.05)
Test for subgroup differences: Not applicable

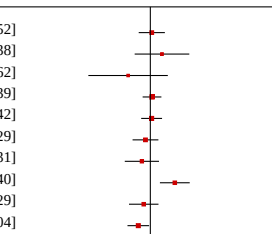


Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Incomplete outcome data (attrition bias)
(D) Selective reporting (reporting bias)
(E) Other bias

Analysis 4.3. Comparison 4: Motivational interviewing versus other active intervention, Outcome 3: Retention in treatment

Study or Subgroup	Std. Mean Difference	SE	Other active intervention Total	MI Total	Weight	Std. Mean Difference IV, Random, 95% CI	Std. Mean Difference IV, Random, 95% CI	Risk of Bias A B C D E
Aharonovich 2017	0.052	0.237	83	77	8.7%	0.05 [-0.41 , 0.52]		+ ? + - -
Alderson 2020	0.414	0.495	38	38	3.1%	0.41 [-0.56 , 1.38]		+ + - + ?
Anton 2005	-0.79	0.72	41	39	1.6%	-0.79 [-2.20 , 0.62]		? ? + ? +
De Wildt 2002	0.06	0.17	78	86	11.8%	0.06 [-0.27 , 0.39]		? ? + + -
Dieperink 2014	0.046	0.189	69	70	10.9%	0.05 [-0.32 , 0.42]		+ + + ? ?
Feldstein Ewing 2021	-0.172	0.234	248	258	8.9%	-0.17 [-0.63 , 0.29]		+ ? + - ?
Kahler 2004	-0.3	0.31	24	24	6.3%	-0.30 [-0.91 , 0.31]		? ? + + ?
Martino 2006	0.87	0.27	20	24	7.5%	0.87 [0.34 , 1.40]		+ ? + + -
Murphy 2018	-0.234	0.267	118	110	7.6%	-0.23 [-0.76 , 0.29]		+ ? - ? ?
Slesnick 2013	-0.427	0.196	118	61	10.5%	-0.43 [-0.81 , -0.04]		+ + - ? ?
Stein 2017	0.013	0.148	116	110	13.0%	0.01 [-0.28 , 0.30]		+ + - - ?
Walitzer 2009	-0.31	0.21	47	48	9.9%	-0.31 [-0.72 , 0.10]		+ ? ? + +
Total (95% CI)			**1000**	**945**	**100.0%**	**-0.04 [-0.23 , 0.14]**		

Heterogeneity: Tau² = 0.05; Chi² = 21.21, df = 11 (P = 0.03); I² = 48%
Test for overall effect: Z = 0.46 (P = 0.65)
Test for subgroup differences: Not applicable



Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Incomplete outcome data (attrition bias)
(D) Selective reporting (reporting bias)
(E) Other bias

ADDITIONAL TABLES

Table 1. Motivational interviewing versus no intervention: specified characteristics for subgroup analysis

Study	Students	Age group	Substance	Number (length) of sessions	Intervention provider

Table 1. Motivational interviewing versus no intervention: specified characteristics for subgroup analysis *(Continued)*

Post-intervention					
Ball 2007a	No	Adults	Alcohol	3	Diverse
Connors 2002	No	Adults	Alcohol	1 (90 min)	Counsellors
Kelly 2000	No	Adults	Alcohol	6 (60 min)	Psychologists
Morgenstern 2017	No	Adults	Alcohol	4 (45-60 min)	Therapists
Stein 2002	No	Adults	Alcohol	2 (60)	Other
Stotts 2006	No	Adults	Cocaine	2 (60 min)	Students
Short-term follow-up					
Bell 2007	No	Adults	Alcohol and drugs	1 (20 min)	Diverse
Borsari 2012	Yes	Young adults	Alcohol	1 (60-90 min)	Clinicians
Carey 2006	Yes	Young adults	Alcohol	1 (70 min)	Students
Carey 2011	Yes	Adolescents	Alcohol	1 (average 62, 30 to 148 min)	Psychology graduate students
Carroll 2006a	No	Adults	Alcohol and drugs	1 (60 min)	Counsellors
Feldstein 2007	No	Adolescents	Alcohol	1 (45 min)	PhD students
Gaume 2014	No	Young adults	Alcohol	1 (20-30 min)	Physicians and psychologists
Kay-Lambkin 2009	No	Adults	Alcohol and drugs	9 (60 min)	Psychologists
Kelly 2000	No	Adults	Alcohol	6 (60 min)	Psychologists
Marijuana Treatment Project 2004	No	Adults	Cannabis	2 (60 min)	NR
Martin 2008	No	Adolescents	Cannabis	2	NR
Mastroleo 2010	No	Young adults	Alcohol	1 (50 min)	Students
Morgenstern 2009	No	Adults	Drugs	4 (60 min)	Psychologists
Murphy 2010	Yes	Young adults	Alcohol	1 (50-60 min)	Psychologists, therapists, social workers
Naar-King 2006	No	Adolescents and young adults	Alcohol and drugs	4 (60 min)	Students

Table 1. Motivational interviewing versus no intervention: specified characteristics for subgroup analysis *(Continued)*

Peterson 2006	No	Adolescents	Alcohol and drugs	1 (30 min)	Counsellors
Schaus 2009	Yes	Young adults	Alcohol	2 (20 min)	Diverse
Wood 2007	Yes	Young adults	Alcohol	2 (52.5 min)	Students
Medium-term follow-up					
Borsari 2012	Yes	Young adults	Alcohol	1 (60-90 min)	Clinicians
Brown 2010	No	Adults	Alcohol	1 (30 min)	Students
Carey 2006	Yes	Young adults	Alcohol	1 (70 min)	Students
Connors 2002	No	Adults	Alcohol	1 (90 min)	Counsellors
Copeland 2001	No	Adults	Cannabis	6 (60 min)	Psychologists
Dermen 2011	Yes	Young adults	Alcohol	2 (30-60 min)	Counsellors
Emmen 2005	No	Adults	Alcohol	2 (90 min)	Psychologists
Kay-Lambkin 2009	No	Adults	Alcohol and drugs	9 (60 min)	Psychologists
Marsden 2006	No	Adolescents and young adults	Alcohol and drugs	1 (45 min)	Other
Morgenstern 2009	No	Adults	Drugs	4 (60 min)	Psychologists
Saitz 2013	No	Adults	Alcohol and drugs	2 (30-45 and 20-30 min)	Counsellors
Schaus 2009	Yes	Young adults	Alcohol	2 (20 min)	Diverse
Stein 2002	No	Adults	Alcohol	2 (60 min)	Other
Winters 2007	Yes	Adolescents	Alcohol and drugs	2 (60 min)	NR
Wood 2007	Yes	Young adults	Alcohol	2 (52.5 min)	Students
Long-term follow-up					
Brown 2010	No	Adults	Alcohol	1 (30 min)	Students
Carey 2006	Yes	Young adults	Alcohol	1 (70 min)	Students
Connors 2002	No	Adults	Alcohol	1 (90 min)	Counsellors
Dermen 2011	Yes	Young adults	Alcohol	2 (30-60 min)	Counsellors
Freyer- Adam 2008	No	Adults	Alcohol	1 (25 min)	Diverse

Table 1. Motivational interviewing versus no intervention: specified characteristics for subgroup analysis *(Continued)*

Kay-Lambkin 2009	No	Adults	Alcohol and drugs	9 (60 min)	Psychologists
Morgenstern 2009	No	Adults	Drugs	4 (60 min)	Psychologists
Murphy 2012	No	Adolescents and young adults	Alcohol and marijuana	4 (60 min)	Psychologists or clinicians
Schaus 2009	Yes	Young adults	Alcohol	2 (20 min)	Diverse

min: minutes; **NR:** not reported

Table 2. Motivational interviewing versus treatment as usual: specified characteristics for subgroup analysis

Study	Students	Age group	Substance	Number (length) of sessions	Profession
Post-intervention					
Ball 2007b	No	Adults	Alcohol and drugs	3 (50 min)	Diverse
Carroll 2009	No	Adults	Alcohol and drugs	3	Other
Kavanagh 2004	No	Adults	Drugs	6-9 (152 min)	NR
Marin-Navarrete 2017	No	Adults	Alcohol and drugs	3	Clinic staff
Walker 2006	No	Adolescents and young adults	Cannabis	2 (60 min)	Diverse
Short-term follow-up					
Ball 2007b	No	Adults	Alcohol and drugs	3 (50 min)	Diverse
Bazargan-Hejazi 2005	No	Adults	Alcohol	1 (20 min)	Other
Berman 2010	No	Adults	Alcohol and drugs	1 (45-120 min)	Clinicians
Caroll 2009	No	Adults	Alcohol and drugs	3	Other
D'Amico 2008	No	Adolescents	Cannabis	1 (15 min)	Other
D'Amico 2018	No	Adolescents	Alcohol and drugs	1 (45 min)	NR
Field 2020	No	Adults	Alcohol and drugs	1 (30-45 min)	Clinicians
Kavanagh 2004	No	Adults	Drugs	6-9 (152 min)	NR
Marin-Navarrete 2017	No	Adults	Alcohol and drugs	3	Clinic staff
Mertens 2014	No	Young adults	Alcohol and drugs	1 (10 min)	Primary care nurse practitioners

Table 2. Motivational interviewing versus treatment as usual: specified characteristics for subgroup analysis *(Continued)*

Miller 2003	No	Adults	Alcohol and drugs	1 (120 min)	Diverse
Monti 2016	No	Adults	Alcohol	1 (60 min)	Doctoral- and master-level interventionists
Walitzer 2009	No	Adults	Alcohol	12 (60 min)	NR
Winhusen 2007	No	Adults	Alcohol and drugs	3 (60 min)	Diverse
Medium-term follow-up					
Brown 2015	No	Adolescents	Alcohol and drugs	2 (45 min)	Psychologists
D'Amico 2018	No	Adolescents	Alcohol and marijuana	1 (45 min)	NR
Field 2020	No	Adults	Alcohol and drugs	1 (30-45 min)	Clinicians
Kavanagh 2004	No	Adults	Drugs	6-9 (152 min)	NR
Maisto 2001	No	Adults	Alcohol	3 (45 min)	NR
Miller 2003	No	Adults	Alcohol and drugs	1 (120 min)	Diverse
Monti 2016	No	Adults	Alcohol	1 (60 min)	Research staff
Swogger 2016	No	Adults	Alcohol and drugs	2.5 (40 min)	Therapists
Walitzer 2009	No	Adults	Alcohol	12 (60 min)	NR
Long-term follow-up					
Alderson 2020	No	Young adults	Alcohol and drugs	Up to 6 sessions (60 min)	Practitioners
D'Amico 2018	No	Adolescents	Alcohol and marijuana	1 (15-20 min)	Facilitators with master and/or bachelor degree
Field 2020	No	Adults	Alcohol and drugs	1 (30-45 min)	Clinicians
Kavanagh 2004	No	Adults	Drugs	6-9 (152 min)	NR
Maisto 2001	No	Adults	Alcohol	3 (45 min)	NR
Miller 2003	No	Adults	Alcohol and drugs	1 (120 min)	Diverse
Saitz 2007	No	Adults	Alcohol	1 (30 min)	Diverse
Walitzer 2009	No	Adults	Alcohol	12 (60 min)	NR

min: minutes; **NR:** not reported

Table 3. Motivational interviewing versus assessment and feedback: specified characteristics for subgroup analysis

Study	Students	Age group	Substance	Number (length) of sessions	Profession
Short-term follow-up					
Bernstein 2009	No	Adolescents and young adults	Marijuana	1 (25 min)	Other
Bien 1993	No	Adults	Alcohol	1 (60 min)	NR
McDevitt-Murphy 2014	No	Adults	Alcohol	1 (60 min)	Clinician
Morgenstern 2012	No	Adults	Alcohol	4 (45-60 min)	Therapists
Stein 2010	No	Adults	Alcohol	2 (30-45 min)	Psychologist
Walters 2009	Yes	Young adults	Alcohol	1 (45 min)	Diverse
White 2006	Yes	Young adults	Alcohol and drugs	2	Counsellor
Medium-term follow-up					
Bien 1993	No	Adults	Alcohol	1 (60 min)	NR
McDevitt-Murphy 2014	No	Adults	Alcohol	1 (60 min)	Clinician
Sellman 2001	No	Adults	Alcohol	4	Diverse
Stein 2010	No	Adults	Alcohol	2 (30-45 min)	Psychologist
Stephens 2007	No		Cannabis	2 (90 min)	Diverse
Walters 2009	Yes	Young adults	Alcohol	1 (45 min)	Diverse
Long-term follow-up					
Bernstein 2009	No	Adolescents and young adults	Marijuana	1 (25 min)	Other
Stephens 2007	No	Adults	Marijuana	2 (90 min)	Diverse
White 2006	Yes	Young adults	Alcohol and drugs	2	Counsellor

min: minutes; **NR:** not reported

Table 4. Motivational interviewing versus other active intervention: specified characteristics for subgroup analysis

Study	Students	Age group	Substance	Number (length) of sessions	Profession
Post-intervention					

Table 4. Motivational interviewing versus other active intervention: specified characteristics for subgroup analysis *(Continued)*

Anaronovich 2017	No	Adults	Drugs	1 (25-30 min) + 2 booster sessions (10-15 min)	Bilingual counsellors
Anton 2005	No	Adults	Alcohol	4	NR
Kadden 2007	No	Adults	Marijuana	2 (60 min)	Diverse
Short-term follow-up					
Barnett 2007	Yes	Young adults	Alcohol	1 + 1 booster session	Counsellors
Borsari 2005	Yes	Young adults	Alcohol	1 (60 min)	Psychologists
Carroll 2006b	No	Young adults	Marijuana	8	Other
Chanut 2007	No	Adults	Alcohol	1 (25 min)	NR
Colby 2018	No	Young adults	Alcohol	1 (60 min)	Clinical psychologist, social worker
De Gee 2014	No	Adolescents	Cannabis	2 (60-90 min)	Prevention workers
Dieperink 2014	No	Adults	Alcohol and drugs	4 (30-45 min)	Healthcare professionals
Kadden 2007	No	Adults	Marijuana	2 (60 min)	Diverse
Kahler 2004	No	Adults	Alcohol	1 (60 min)	NR
Mackiewicz Seghete 2022	No	Adolescents	Alcohol	2 (60 min)	Therapists
Martino 2006	No	Adults	Alcohol and drugs	2 (60 min)	Diverse
McCambridge 2008	No	Adolescents and young adults	Alcohol and cannabis	1	Students
Parsons 2014	No	Adults	Drugs	4 (60 min)	Therapists with PhD and/or master degree
Slesnick 2013	No	Adolescents	Alcohol and drugs	2 (60 min)	Therapists
Slesnick 2015	No	Adolescents and young adults	Alcohol and drugs	2 (60 min)	NR
Stein 2017	No	Young adults	Alcohol and drugs	5 (20-30 min)	Diverse
UKATT 2005	No	Adults	Alcohol	3 (50 min)	Diverse
Walitzer 2009	No	Adults	Alcohol	12 (60 min)	NR
Wood 2007	Yes	Young adults	Alcohol	2 (52.5 min)	Students
Medium-term follow-up					

Table 4. Motivational interviewing versus other active intervention: specified characteristics for subgroup analysis *(Continued)*

Aharonovich 2017	No	Adults	Drugs	1 (25-30 min)+2 booster sessions (10-15 min)	Bilingual counsellors
Borsari 2005	Yes	Young adults	Alcohol	1 (60 min)	Psychologists
Chanut 2007	No	Adults	Alcohol	1 (25 min)	NR
De Wildt 2002	No	Adults	Alcohol	3 (20 min)	Diverse
Dieperink 2014	No	Adults	Alcohol and drugs	4 (30-45 min)	Health-care professionals
Feldstein Ewing 2021	No	Adolescents	Alcohol and cannabis	2 (60 min)	Therapists
Kadden 2007	No	Adults	Marijuana	2 (60 min)	Diverse
Kahler 2004	No	Adults	Alcohol	1 (60 min)	NR
Logan 2015	Yes	Young adults	Alcohol	1 (45-60 min)	Psychology graduate students
Mackiewicz Seghete 2022	No	Adolescents	Alcohol	2 (60 min)	Therapists
Match 1993	No	Adults	Alcohol	4	Diverse
McCambrigde 2008	No	Adolescents and young adults	Alcohol and cannabis	1	Students
Parsons 2014	No	Adults	Drugs	4 (60 min)	Therapists
Slesnick 2013	No	Adolescents	Alcohol and drugs	2 (60 min)	Therapists
Slesnick 2015	No	Adolescents and young adults	Alcohol and drugs	2 (60 min)	NR
Stein 2017	No	Young adults	Alcohol and drugs	5 (20-30 min)	Diverse
Walitzer 2009	No	Adults	Alcohol	12 (60 min)	NR
Wood 2007	Yes	Young adults	Alcohol	2 (52.5 min)	Students
Long-term follow-up					
Aharonovich 2017	No	Adults	Drugs	1 (25-30 min) + 2 booster sessions (10-15 min)	Bilingual counsellors
Barnett 2007	Yes	Young adults	Alcohol	1 + 1 booster session	Counsellors
Kadden 2007	No	Adults	Marijuana	2 (60 min)	Diverse
Mackiewicz Seghete 2022	No	Adolescents	Alcohol	2 (60 min)	Therapists
Match 1993	No	Adults	Alcohol	4	Diverse

Table 4. Motivational interviewing versus other active intervention: specified characteristics for subgroup analysis *(Continued)*

Parsons 2014	No	Adults	Drugs	4 (60 min)	Therapists
Slesnick 2013	No	Adolescents	Alcohol and drugs	2 (60 min)	Therapists
Slesnick 2013	No	Adolescents and young adults	Alcohol and drugs	4	NR
Stein 2017	No	Young adults	Alcohol and drugs	5 (20-30 min)	Diverse
UKATT 2005	No	Adults	Alcohol	3 (50 min)	Diverse
Walitzer 2009	No	Adults	Alcohol	12 (60 min)	NR

min: minutes; **NR:** not reported

Table 5. Motivational interviewing versus no intervention: extent of substance use as reported

Study	Outcome as reported in the study	Follow-up (as reported in the study)	Results (MI vs. no intervention)
Post-intervention			
Ball 2007a	Drinks per drinking day	Post	2.53 (SD 0.98) vs. 3.63 (SD 1.36)
	Frequency of days drinking		0.68 (SD 0.3) vs. 0.68 (SD 0.28)
Connors 2002	Days abstinent	Post	28 (SD 3) vs. 19.9 (SD 10.17)
	Heavy drinking days		1 (SD 2.06) vs. 3.59 (SD 5.37)
Kelly 2000	Standard drinks per day	Post	2.42 (SD 1.44) vs. 5.55 (SD 3.25)
Morgenstern 2017	Heavy drinking days per week	8 weeks	2.71 (SD 1.99) vs. 2.49 (SD 1.95)
	Sum of standard drinks per week		24.8 (SD 18.9) vs. 23.3 (SD 17.3)
Stein 2002	Drinking days	1 month	11.1 (SD 10.9) vs. 11.4 (SD 10.6)
Stotts 2006	Cocaine positive	Post	56.3 vs. 84.6%
Short-term follow-up			
Bell 2007	Drinks per day	2 months	1.2 (SD 0.4) vs. 3.2 (SD 8.8)
	Drinks		84.1 (SD 159.5) vs. 182.6 (SD 499.8)
	Substance use days		8.6 (SD 20.5) vs. 1.3 (SD 2.9)
	Substance use per day		0.1 (SD 0.2) vs. 0 (SD 0)
Borsari 2012	Heavy drinking days (in the past month)	3 months	6.47 (SD 4.99) vs. 7.31 (SD 5.43)
Carey 2006	Drinks per drinking day	1 month	4.8 (SD 3) vs. 5.3 (SD 2.3)

Table 5. Motivational interviewing versus no intervention: extent of substance use as reported *(Continued)*

	Drinks per week		13.8 (SD 10.5) vs. 16.4 (SD 9.1)
	Heavy drinking frequency		5.1 (SD 4.7) vs. 6.2 (SD 4)
	Peak BAC		0.17 (SD 0.12) vs. 0.18 (SD 0.09)
	RAPI		6.2 (SD 5.7) vs. 8.5 (SD 6.7)
Carey 2011	Reductions in number of drinks per heaviest week	1 month	Females: -5.04 vs. -2.67 (95% CI -4.47 to -1.13)
			Males: -4.94 vs. 0.34 (95% CI -1.22 to 2.06)
Carroll 2006a	Days of use of primary substance	1 month	3.33 (SD 6.31) vs. 3.99 (SD 7.24)
		3 months	6.85 (SD 12.65) vs. 8.05 (SD 12.24)
Dermen 2011	Drinking days (last 90 days)	3 months	27.5 (SD 12.9) vs. 29.2 (SD 18.9)
	Drinks per drinking day (last 90 days)		5.2 (SD 2.9) vs. 5.0 (SD 2.4)
Feldstein 2007	Binge episodes	2 months	0.77 (SD 1.06) vs. 1.27 (SD 9.96)
	RAPI		26.34 (SD 4.12) vs. 27.2 (SD 4.23)
Gaume 2014	Drinking composite score	3 months	MD -0.13 (95% CI -0.25 to -0.02)
Kay-Lambkin 2009	Alcohol	3 months	3.58 (SD 4.6) vs. 4.79 (SD 4.95)
	Cannabis		8.9 (SD 11.25) vs. 7.24 (SD 7.77)
	Hazardous drug use		39.84 (SD 50.27) vs. 31.11 (SD 13.54)
Kelly 2000	Standard drinks per day	1 month	1.92 (SD 1.33) vs. 5.34 (SD 3.7)
Marijuana Treatment Project 2004	Abuse symptoms	4 months	1.38 (SD 1.1) vs. 1.63 (SD 0.91)
	Dependence symptoms		3.7 (SD 2.26) vs. 4.36 (SD 1.92)
	Joints per day		1.5 (SD 1.62) vs. 2.03 (SD 1.94)
	Marijuana problems		8.35 (SD 4.06) vs. 7.77 (SD 3.9)
	Percentage of days smoking		55.9 (SD 36.2) vs. 75.6 (SD 30.7)
	Periods smoked per day		1.35 (SD 0.89) vs. 1.95 (SD 1.05)
Martin 2008	Cannabis use	3 months	54.3 (SD 36.1) vs. 54.5 (SD 31.6)
	Mean cones per week		75.1 (SD 89.7) vs. 59.4 (SD 62.2)
Mastroelo 2010	Daily drinking questionnaire	3 months	11.57 (SD 8.05) vs. 14.54 (SD 11.93)
	Heavy drinking		-1.07 (SD 3.08) vs. 0.05 (SD 3.59)
	Peak BAC		0.13 (SD 0.08) vs. 0.15 (SD 0.11)
Morgenstern 2009	Club drug use	3 months	Cohen's d 0.23 (SE 0.228)
Murphy 2010	Drinks per week (last month)	1 month	9.43 (SD 11.84) vs. 14.99 (SD 11.34)
	Heavy drinking per month		1.85 (SD 2.83) vs. 3.61 (SD 3.26)

Table 5. Motivational interviewing versus no intervention: extent of substance use as reported *(Continued)*

Naar-King 2006	Most number of times tried marijuana	3 months	1.76 (SD 3.57) vs. 0.65 (SD 1.23)
	Most standard drinks one week		2.01 (SD 2.5) vs. 3.96 (SD 7.73)
Peterson 2006	Days of marijuana use	1 month	13.61 (SD 11.33) vs. 14.81 (SD 12.8)
	Days of marijuana use	3 months	11.83 (SD 11.74) vs. 12.14 (SD 12.08)
	Other illicit drug use days	1 month	7.86 (SD 10.32) vs. 7.99 (SD 10.43)
	Other illicit drug use days	3 months	7.91 (SD 10.31) vs. 6.39 (SD 9.31)
Schaus 2009	Drinks per sitting	3 months	4.02 (SD 3.22) vs. 4.49 (SD 3.08)
	Drinks per week		7.33 (SD 8.44) vs.9.47 (SD 9.65)
	Heavy drinking episodes		4.55 (SD 6.24) vs. 5.37 (SD 6.53)
	Times drunk per week		0.85 (SD 0.93) vs. 1.24 (SD 1.15)
	Peak BAC		0.11 (SD 0.09) vs. 0.14 (SD 0.09)
	Peak no drinks per sitting		6.87 (SD 5.38) vs. 8.03 (SD 5.15)
	Typical BAC		0.05 (SD 0.05) vs. 0.07 (SD 0.05)
Wood 2007	Alcohol consumption past 30 days	1 month	73.46 (SD 41.33) vs. 86.28 (SD 39.3)
	Alcohol consumption past 30 days	3 months	75.86 (SD 47.06) vs. 84. 56 (SD 43.8)
Medium-term follow-up			
Borsari 2012	Heavy drinking days (last month)	6 months	6.16 (SD 4.77) vs. 6.83 (SD 4.99)
	Heavy drinking days (last month)	9 months	6.61 (SD 5.02) vs. 6.89 (5.42)
Brown 2010	ALT	6 months	37.16 (SD 38.81) vs. 36.81 (SD 37.76)
	AST		33.17 (SD 27.23) vs. 34.47 (SD 33.35)
	GGT		54.05 (SD 94.59) vs. 68.34 (SD 111.3)
	MMPI-MAC		24.91 (SD 4.63) vs. 25.79 (SD 5.31)
	MCV		93.95 (SD 7.05) vs. 92.88 (SD 5.74)
	Risky drinking		39.48 (SD 32.13) vs. 37.36 (SD 28.52)
Carey 2006	Drinks per drinking day	6 months	4.8 (SD 2.2) vs. 5.4 (SD 2.4)
	Drinks per week		17.6 (SD 13.1) vs. 17.4 (SD 10.06)
	Heavy drinking - frequency		7 (SD 5.3) vs. 7.4 (SD 5.4)
	Peak BAC		0.18 (SD 0.11) vs. 0.2 (SD 0.11)
	RAPI		6.5 (SD 6.1) vs. 8.2 (SD 8)
Connors 2002	Days abstinent	6 months	22.9 (SD 7.78) vs. 18.84 (SD 11.97)

Table 5. Motivational interviewing versus no intervention: extent of substance use as reported *(Continued)*

	Heavy drinking days		3.04 (SD 5.14) vs. 5.6 (9.06)
Copeland 2001	Cannabis dependence (SDS-score)	8 months	MI (1CBT): 7.6 (SD 4.4) vs. MI (6CBT): 5.8 (SD 4.3) vs. 9.2 (SD: 3.2)
	Daily cannabis use last month		MI (1CBT): 1.5 (SD 1.2) vs. MI (6CBT): 1.3 (SD 0.9) vs. 1.8 (SD 1)
Dermen 2011	Drinking days (last 90 days)	6 months	26.0 (SD 17.0) vs. 30.4 (SD 19.5)
	Drinks per drinking day (last 90 days)	6 months	4.2 (SD 2.0) vs. 5.0 (SD 2.1)
		9 months	24.8 (SD 14.7) vs. 27.1 (SD 19.0)
	Drinking days (last 90 days)	9 months	4.3 (SD 2.0) vs. 5.3 (SD 2.4)
	Drinks per drinking day (last 90 days)		
Emmen 2005	CDT	6 months	2.52 (SD 1.04) vs. 2.35 (SD 0.77)
	Units per day (previous month)		3.35 (SD 2.11) vs. 2.86 (SD 2.35)
Kay-Lambkin 2009	Alcohol	6 months	3.62 (SD 5.31) vs. 6.41 (SD 5.91)
	Cannabis		7.1 (SD 9.51) vs. 8 (9.7)
	Hazardous drug use		27 (SD 22.8) vs. 38.78 (SD 17.14)
Marsden 2006	Alcohol number of days	6 months	28.87 (SD 25.7) vs. 30.66 (SD 25.3)
	Cannabis number of days		52.01 (SD 36.5) vs. 57.24 (SD 36.3)
	Cocaine number of days		5.54 (SD 11.5) vs. 7.4 (SD 12.6)
	Crack number of days		4.67 (SD 5.1) vs. 5.73 (SD 15.8)
	Ecstasy number of days		8.2 (SD 13.5) vs. 8.7 (SD 13.2)
Morgenstern 2009	Club drug use	6 months	Cohen's d 0.37 (SE 0.230)
	Club drug use	9 months	Cohen's d 0.17 (SE 0.238)
Saitz 2013	Days > 1 time using main drug	6 months	10.95 (SD 12.1) vs. 9.1 (SD 11.3)
	Days using main drugs		14.15 (SD 12.4) vs. 13.8 (SD 12.1)
	Main drug use (ASSIST)		18.3 (SD 9.6) vs. 18.1 (SD 9.2)
Schaus 2009	Drinks per sitting	6 months	3.18 (SD 3.28) vs. 4.55 (SD 3.43)
	Drinks per sitting	9 months	3.98 (SD 3.89) vs. 4.00 (SD 2.89)
	Drinks per week	6 months	6.16 (SD 7.51) vs. 8.9 (SD 9.89)
	Drinks per week	9 months	6.12 (SD 7.18) vs. 7.47 (SD 8.57)
	Heavy drinking episode	6 months	3.92 (SD 5.37) vs. 5.33 (SD 7.69)
	Heavy drinking episode	9 months	3.94 (SD 5.57) vs. 4.79 (SD 7.47)
	Times drunk per week	6 months	0.71 (SD 0.94) vs. 1.1 (SD 1.09)
	Times drunk per week	9 months	0.93 (SD 1.33) vs. 1.33 (1.52)

Table 5. Motivational interviewing versus no intervention: extent of substance use as reported *(Continued)*

	Peak BAC	6 months	0.1 (SD 0.09) vs. 0.14 (SD 0.11)
	Peak BAC	9 months	0.11 (SD 0.11) vs. 0.12 (SD 0.09)
	Peak no drinks per sitting	6 months	6.52 (SD 5.27) vs. 7.98 (SD 5.32)
	Peak no drinks per sitting	9 months	6.71 (SD 5.53) vs. 6.92 (SD 4.49)
	Typical BAC	6 months	0.05 (SD 0.05) vs. 0.07 (SD 0.07)
	Typical BAC	9 months	0.05 (SD 0.07) vs. 0.06 (SD 0.05)
Stein 2002	Drinking days	6 months	7.6 (SD 10.3) vs. 9.1 (SD 11.0)
	> 50% reduction in cocaine use		55.7 vs. 46.5%
	Abstinence		33.0 vs. 25.7%
	Any reduction in cocaine use		61.9 vs. 56.4%
Winters 2007	Alcohol use days	6 months	4.5 (SD 0.9) vs. 5.7 (SD 1.1)
	Binge-drinking days		1.8 (SD 1) vs. 2.4 (SD 1.4)
	Illicit drug use days		11.9 (SD 5.2) vs. 13.4 (SD 5.4)
Wood 2007	Alcohol consumption past 30 days	6 months	72.99 (SD 53. 36) vs. 82.1 (SD 50.34)
Long-term follow-up			
Brown 2010	ALT	12 months	37.66 (SD 29.25) vs. 40.26 (SD 32.93)
	GGT		59.926 (SD 81.03) vs. 63.26 (SD 85.84)
	MAC		25.51 (SD 4.25) vs. 24.82 (SD 5.16)
	MCV		93.62 (SD 6.44) vs. 93.46 (SD 5.57)
	Risky drinking		34.27 (SD 30.83) vs. 39.06 (SD 31.85)
Carey 2006	Drinks per drinking day	12 months	4.5 (SD 2.2) vs. 4.6 (SD 2.5)
	Drinks per week		15.6 (SD 10.8) vs. 15 (SD 10.5)
	Heavy drinking frequency		5.7 (SD 4.2) vs. 5.1 (SD 4)
	Peak BAC		0.16 (SD 0.1) vs. 0.17 (SD 0.1)
	RAPI		5.5 (SD 6.3) vs. 5.3 (SD 5.1)
Connors 2002	Days abstinent	12 months	22.41 (SD 9.26) vs. 19.81 (SD 11.18)
	Heavy drinking days		1.58 (SD 3.36) vs. 5.34 (SD 8.86)
Dermen 2011	Drinking days (last 90 days)	12 months	24.6 (SD 13.5) vs. 27.6 (SD 19.4)
	Drinks per drinking days (last 90 days)		4.4 (SD 2.1) vs. 5.0 (SD 2.7)
	Drinking days (last 90 days)		21.7 (SD 13.5) vs. 24.9 (SD 15.7)
	Drinks per drinking day (last 90 days)		4 (SD 2.1) vs. 5.1 (SD 2.9)

Table 5. Motivational interviewing versus no intervention: extent of substance use as reported *(Continued)*

Freyer- Adam 2008	Alcohol per day	12 months	42.1 (SD 56.22) vs. 46.32 (SD 59.33)
	Alcohol per week		255.39 (SD 346.15) vs. 274.01 (SD 344.09)
Kay-Lambkin 2009	Alcohol	12 months	2.49 (SD 3.47) vs. 4.03 (SD 3.22)
	Cannabis		5.72 (SD 6.22) vs. 8.61 (SD 10.16)
	Hazardous drug use		24.21 (SD 18.71) vs. 34.11 (SD 16.01)
Morgenstern 2009	Club drug use	12 months	Cohen's d 0.61 (SE 0.256)
Murphy 2012	Only alcohol use/past week	15 months	28 vs. 41%
	Only alcohol use/past week (self-reported)		39.7% vs. 53.6%, Chi-Square=2.81
	Only marijuana use/past week		25.9% vs. 23.2%, Chi-Square=0.11
Schaus 2009	Drinks per sitting	12 months	3.96 (SD 3.01) vs. 4.04 (SD 3.02)
	Drinks per week		6.45 (SD 7.47) vs. 7.26 (SD 8.36)
	Heavy drinking episodes		4.34 (SD 5.91) vs. 4.37 (SD 6.06)
	No. of times drunk per week		1.31 (SD 2.11) vs. 1.7 (SD 2.05)
	Peak BAC		0.11 (SD 0.09) vs. 0.11 (SD 0.09)
	Peak no drinks per sitting		6.71 (SD 5.27) vs. 6.92 (SD 4.59)
	Typical BAC		0.06 (SD 0.05) vs. 0.06 (SD 0.05)

ALT: alanine aminotransferase; **AST:** aspartate aminotranferase; **BAC:** blood alcohol concentration; **CDT:** serum carbohydrate-deficient transferrin; **GGT:** gammaglutamyl transferase; **MCV:** mean corpuscular red blood cell volume; **MD:** mean difference; **MMPI-MAC:** MacAndrew Alcoholism Scale from the Minnesota Multiphasic Personality Inventory–2; **RAPI:** Rutgers Alcohol Problems Index; **SD:** standard deviation; **SE:** standard error

Table 6. Motivational interviewing versus treatment as usual: extent of substance use as reported

Study	Outcome as reported in the study	Follow-up as reported in the study	Results (MI vs. treatment as usual)
Post-intervention			
Ball 2007b	Days/week primary substance use	Post	0.67 (SD 1.67) vs. 0.37 (SD 1.21)
Carroll 2009	Percent days abstinent	1–4 weeks	94.7 (SD 12.1) vs. 92.2 (SD 17.8)
	Percent positive urine specimens		37.6 (SD 41.9) vs. 31.8 (SD 41.3)
Kavanagh 2004	Abstinent or improved	6 weeks	10/13 (76.9%) vs. 9/12 (75%)
Marín-Navarrete 2017	Days of primary substance use	1–3 weeks	Cohen's d: -0.31 (-0.68 to 0.05)
Walker 2006	Days of marijuana use	Post	31.05 (SD 23.28) vs. 32.76 (SD 20.61)

Table 6. Motivational interviewing versus treatment as usual: extent of substance use as reported *(Continued)*

Short-term follow-up

Ball 2007b	Days/week primary substance use	16 weeks	0.79 (SD 1.76) vs. 0.57 (SD 1.46)
Bazargan-Hejazi 2005	At risk /moderate (AUDIT 7-18)	3 months	11/88 (12.5%) vs. 5/97 (5.1%)
	High risk (AUDIT 19-40)		31/88 (35.2%) vs. 32/97 (33.0%)
	Participants who reduced their risk		42/88 (48%) vs. 37/97 (38%)
Berman 2010	Alcohol use (AUDIT)	3 months	10.89 (SD 10.96) vs. 9.12 (SD 10.34)
	Drug use (DUDIT)		25.57 (SD 11.93) vs. 23.75 (SD 10.68)
Carroll 2009	Percent days abstinent	5–16 weeks	94.4 (SD 13.9) vs. 92.5 (SD 18.3)
D'Amico 2008	Intentions to use alcohol	3 months	2.5 (SD 1.18) vs. 3.1 (SD 0.83)
	Intentions to use marijuana		2.18 (SD 1.09) vs. 2.75 (SD 1.16)
	Alcoholic drinks on days drinking		3.14 (SD 1.87) vs. 3.6 (SD 1.84)
	Days +3 drinks		1.04 (SD 1.09) vs. 1.35 (SD 1.08)
	Days last month drank alcohol		1.72 (SD 1.51) vs. 1.95 (SD 1.6)
	Days last month used marijuana		1.54 (SD 1.71) vs. 2.1 (SD 2.04)
	Times used marijuana on days used		1 (SD 0.92) vs. 1.45 (SD 0.99)
D'Amico 2018	Alcohol use	3 months	5.18 (SD 5.59) vs. 5.64 (SD 5.84)
	Heavy alcohol		2.76 (SD 4.56) vs. 3.04 (SD 4.79)
	Marijuana		6.38 (SD 8.05) vs. 5.95 (SD 7.58)
	Intentions to use alcohol		2.5 (SD 1.18) vs. 3.1 (SD 0.83)
	Intentions to use marijuana		2.18 (SD 1.09) vs. 2.75 (SD 1.16)
	Alcoholic drinks on days drinking		3.14 (SD 1.87) vs. 3.6 (SD 1.84)
	Days with more than three drinks		1.04 (SD 1.09) vs. 1.35 (SD 1.08)
	Days last month drank alcohol		1.72 (SD 1.51) vs. 1.95 (SD 1.6)
	Days last month used marijuana		1.54 (SD 1.71) vs. 2.1 (SD 2.04)
	Times used marijuana on days used		1 (SD 0.92) vs. 1.45 (SD 0.99)
Field 2020	Average drinks	3 months	8.58 (SD 24.8) vs. 13.94 (SD 31.73)
	Maximum number of drinks		8.29 (SD 22.11) vs. 7.86 (SD 14.12)
Kavanagh 2004	Abstinent or improved	3 months	10/13 (76.9%) vs. 7/12 (58.3%)
Marín-Navarrete 2017	Days of primary substance use	5–16 weeks	Cohen's d: -0.04 (95%CI -0.37 to 0.32)
Mertens 2014	Alcohol use (ASSIST score) (past 3 months)	3 months	8.0 vs. 9.1 (p=0.029)
			13.7 vs. 15.1 (p= 0.081)

Table 6. Motivational interviewing versus treatment as usual: extent of substance use as reported *(Continued)*

	Alcohol and drug use (ASSIST score) (past 3 months)		4.6 vs. 5.2 (p =0.112)
	Cannabis use (ASSIST Score (past 3 months)		
Miller 2003	Abstinence from illicit drugs	3 months	0.78 (SD 0.32) vs. 0.78 (SD 0.26)
Monti 2016	CDC excessive drinking (8/15 drinks per week for women/men), 30 days	3 months	39 (SD 27.7) vs. 67 (SD 41.6)
	FDA Heavy drinking (4/5 drinks in one day for women/men)		100 (SD 70.9) vs. 125 (SD 77.6)
	Number of heavy drinking days		3.8 (SD 5.4) vs. 5.6 (6.4)
	Average number of drinks per week		9.1 (SD 11.5) vs.16.5 (SD 28.1)
Walitzer 2009	Percent days abstinent	3 months	69.6 (SD 31.7) vs. 66.4 (SD 34.6)
	Percent days heavy drinking		9.4 (SD 18.6) vs. 16.4 (SD 31.3)
Winhusen 2007	Days of use	3 months	4.26 (SD 8.73) vs. 4.7 (SD 8.87)
Medium-term follow-up			
Brown 2015	Number of days of alcohol use (across the first 6 months)	6 months	MD -0.52 (95% CI -1.1 to 0.06)
	Number of days of any substance use (across the first 6 months)		MD -0.58 (95% CI -1.16 to -0.01)
	Number of days of marihuana use (across the first 6 months)		MD -0.81 (95% CI -1.6 to -0.02)
D'Amico 2018	Alcohol use	6 months	4.72 (SD 5.86) vs. 5.44 (SD 6.45)
	Heavy alcohol use		2.69 (SD 4.73) vs. 2.68 (SD 4.66)
	Marijuana use		6.13 (SD 7.90) vs. 5.07 (SD 6.83)
Field 2020	Average drinks	6 months	11.1 (SD 24.2) vs. 14.83 (SD 28.23)
	Maximum number of drinks		9.35 (SD 18.77) vs. 9.01 (SD 15.54)
Kavanagh 2004	Abstinent or improved	6 months	11/13 (84.6%) vs. 7/12 (58.3%)
Maisto 2001	Days 1–6 drinks	6 months	8.4 (SD 8.72) vs. 8.4 (SD 9.41)
	Days abstinent		19.6 (SD 9.37) vs. 19 (9.88)
	Drinks per drinking day		4.4 (SD 3.49) vs. 5.1 (SD 4.94)
	Number of drinks		44.4 (SD 49.91) vs. 54.6 (SD 61.15)
Miller 2003	Abstinence from illicit drugs	6 months	0.76 (SD 0.31) vs. 0.77 (SD 0.29)
	Abstinence from illicit drugs	9 months	0.78 (SD 0.33) vs. 0.77 (SD 0.3)
Monti 2016	Average number of drinks per week	6 months	9.2 (SD 12.4) vs. 12.6 (SD 17.9)
	CDC excessive drinking (last 30 days)	6 months	36.0 (SD 24.5) vs. 61.0 (SD 36.7)

Table 6. Motivational interviewing versus treatment as usual: extent of substance use as reported *(Continued)*

	FDA Heavy drinking (last 30 days)	6 months	108 (SD 73.5) vs. 119 (SD 71.7)
	Number of heavy drinking days (last 30 days)	6 months	3.8 (SD 5.8) vs. 4.7 (SD 6.3)
		9 months	91.0 (SD 61.6) vs. 110.0 (SD 67.1)
	FDA Heavy drinking (last 30 days)	9 months	8.4 (SD 11.6) vs. 12.1 (17.6)
	Average number of drinks per week	9 months	34 (SD 22.8) vs. 62.0 (SD 37.8)
	CDC excessive drinking (last 30 days)	9 months	3.7 (SD 5.9) vs. 4.7 (SD 6.7)
	Number of heavy drinking days (last 30 days)		
Swogger 2016	Percent days abstinent (last 90 days)	6 months	MD 0.06 (t=0.17)
Walitzer 2009	Percent days abstinent	6 months	66.1 (SD 36.6) vs. 59.8 (SD 37.4)
	Percent days abstinent	9 months	63.6 (SD 35.1) vs. 68.1 (SD 32.8)
	Percent days heavy drinking	6 months	9.6 (SD 21.1) vs. 17.9 (SD 30.6)
	Percent days heavy drinking	9 months	11.7 (SD 22.9) vs. 9.8 (SD 20.2)
Long-term follow-up			
Alderson 2020	AUDIT (hazardous alcohol)	12 months	12/17 (71%) vs. 10/20 (50%)
	ASSIST-Y (drug use): cannabis		12/17 (70.5%) vs. 14/20 (70%)
	ASSIST-Y (drug use): cocaine		8/17 (47%) vs. 7/20 (35%)
	ASSIST-Y (drug use): amphetamine		7/17 (41%) vs. 3/20 (15%)
	ASSIST-Y (drug use): sedative		6/17 (35%) vs. 5/20 (25%)
	ASSIST-Y (drug use): hallucinogens		4/17 (23.5%) vs. 4/20 (20%)
	ASSIST-Y (drug use): novel psychoactive substance		3/17 (18%) vs. 2/20 (10%)
	ASSIST-Y (drug use): opoid		2/17 (12%) vs. 1/20 (5%)
	ASSIST-Y (drug use): inhalants		2/17 (12%) vs. 2/20 (10%)
	ASSIST-Y (drug use): other		0 vs. 0/20 (0%)
	ASSIST-Y (drug use): episodes of heavy drinking		Median 1 (IQR 0-4), Range: 0-10 vs. 1.5 (IQR 0-5.5), Range: 0-9
D'Amico 2018	Alcohol use	12 months	4.54 (SD 5.68) vs. 5.09 (SD 6.39)
	Heavy alcohol use		2.44 (SD 4.60) vs. 2.85 (SD 5.17)
	Marijuana use		6.76 (SD 8.37) vs. 5.21 (SD 7.35)
Field 2020	Average drinks	12 months	12.76 (SD 31.01) vs. 13.33 (SD 9.65)
	Maximum number of drinks		10.23 (SD 13.1) vs. 11.02 (SD 16.46)
Kavanagh 2004	Abstinent or improved	12 months	8/13 (61.5%) vs. 3/12 (25.0%)
Maisto 2001	Days 1–6 drinks	12 months	8.3 (SD 8.72) vs. 8.9 (SD 9.17)

Table 6. Motivational interviewing versus treatment as usual: extent of substance use as reported *(Continued)*

	Days abstinent		20.1 (8.72) vs. 18.4 (SD 9.88)
	Drinks per drinking day		4 (SD 3.05) vs. 4.5 (SD 3.53)
	Number of drinks		42.9 (SD 52.31) vs. 54.1 (SD 55.04)
Miller 2003	Abstinence from illicit drugs	12 months	0.81 (SD 0.29) vs. 0.77 (SD 0.34)
Saitz 2007	Drinking risky amounts	12 months	87/141 (62%) vs. 93/146 (64%)
	Heavy drinking episodes		87/141 (62%) vs. 91/146 (62%)
	Abstinence		42/141 (30%) vs. 40/146 (27%)
Walitzer 2009	Percent days abstinent	12 months	67.4 (SD 33.9) vs. 69 (SD 30.3)
	Percent days heavy drinking		9.9 (SD 23.5) vs. 13.4 (SD 22.9)

ASSIST: Alcohol, Smoking and Substance Involvement Screening Test; **ASSIST-Y:** Alcohol, Smoking and Substance Involvement Screening Test-Youth; **AUDIT:** Alcohol Use Disorders Identification Test; **CDC:** Centers for Disease Control; **DUDIT:** Drug use disorders identification test; **FDA:** Food and Drug Administration; **IQR:** interquartile range; **SD:** standard deviation

Table 7. Motivational interviewing versus assessment and feedback: extent of substance use as reported

Study	Outcome as reported in the study	Follow-up as reported in the study	Results (MI vs. assessment and feedback)
Short-term follow-up			
Bernstein 2009	Abstinence marijuana	3 months	OR 1.15 (95% CI 0.36 to 3.73)
	Days per month marijuana		14.2 (SD 10.8) vs. 13.7 (SD 11.2)
Bien 1993	Blood alcohol level	3 months	41.9 (SD 100) vs. 190.9 (SD 265.2)
	Percent days abstinent		95.7 (SD 93) vs. 80.1 (SD 26.6)
	Standard drink units (SEC)		12.9 (SD 26.41) vs. 272.2 (SD 528.9)
McDevitt-Murphy 2014	Drinking days per week	6 weeks	1.76 (SD 1.8) vs. 2.05 (SD 1.7)
	Drinks per drinking day		5.14 (SD 3.73) vs. 5.84 (SD 3.74)
	Drinks per week		9.53 (SD 11.53) vs. 11.26 (SD 11.38)
	Past month binge days		3.72 (SD 5.46) vs. 3.91 (SD 4.66)
Morgenstern 2012	Drinks per week	8 weeks	22.9 (SD 15.6) vs. 21.8 (SD 11.0)
Stein 2010	Percent abstinent days	1 month	OR 1.22 (95% CI 0.69 to 2.17)
	Percent abstinent days	3 months	OR 1.96 (95% CI 1.17 to 3.30)
Walters 2009	MI (with vs. without feedback) vs. feedback vs. assessment only vs. feedback only:	3 months	11.69 (SD 12.7) vs. 13.17 (SD 13.33) vs. 11.97 (SD 11.8) vs. 13.48 (SD 14.67)
	Drinks per week		0.13 (SD 0.08) vs. 0.14 (SD 0.08) vs. 0.13 (SD 0.1) vs. 0.12 (SD 0.09)

Table 7. Motivational interviewing versus assessment and feedback: extent of substance use as reported *(Continued)*

	Peak BAC		
White 2006	Freq alcohol use past month	4 months	1.66 (SD 1.05) vs. 1.59 (SD 1.19)
	Freq marijuana past month		0.38 (SD 0.86) vs. 0.46 (SD 1.08)
	Heavy drinking		1.2 (SD 2.09) vs. 1.36 (SD 2.34)
	Drinks in typical week		5.08 (SD 6.21) vs. 5.3 (SD 7.19)
	Peak BAC		0.05 (SD 0.06) vs. 0.04 (SD 0.06)
Medium-term follow-up			
Bien 1993	Blood alcohol level	6 months	50.1 (SD 87.1) vs. 91.1 (SD 167.1)
	Percent days abstinent		71.1 (SD 38.1) vs. 81.3 (SD 34)
	Standard drink units		113.6 (SD 181.3) vs. 394.1 (SD 1176)
McDevitt-Murphy 2014	Drinking days per week	6 months	1.97 (SD 2.19) vs. 2.15 (SD 2.03)
	Drinks per drinking day		4.16 (SD 2.37) vs. 5.13 (SD 3.24)
	Drinks per week		8.78 (SD 11.63) vs. 9.34 (SD 10.34)
	Past month binge days		2.97 (SD 5.26) vs. 2.77 (SD 4.05)
Sellman 2001	GAS score	6 months	70.2 (SD 7.78) vs. 67.6 (SD 8.22)
Stein 2010	Percent abstinent days	6 months	OR 1.44 (95% CI 0.84 to 2.49)
Stephens 2007	Days of marijuana use per week	6 months	4.9 (SD 2.13) vs. 5.22 (SD 2.13)
	Dependence symptoms		2.59 (SD 1.65) vs. 3.26 (SD 1.65)
	Number of problems		4.06 (SD 3.23) vs. 5.46 (3.23)
	Periods smoked per day		
Walters 2009	MI feedback vs. assessment only vs. feedback only:	6 months	10.19 (SD 8.71) vs. 12.92 (SD 14.16) vs. 12.07 (SD 12.31)
	Drinks per week		0.11 (SD 0.08) vs. 0.13 (SD 0.1) vs. 0.11 (SD 0.09)
	Peak BAC		11.59 (SD 9.55) vs. 12.92 (SD 14.16) vs. 12.07 (SD 12.31)
	MI only vs. assessment only vs. feedback only:		0.14 (SD 0.11) vs. 0.13 (SD 0.1) vs. 0.11 (SD 0.09)
	Drinks per week		
	Peak BAC		
Long-term follow-up			
Bernstein 2009	Abstinence marijuana	12 months	OR 2.89 (95% CI 1.22 to 6.84)
	Days per month marijuana		11 (SDD 10.7) vs. 13.2 (SD 11.7)
Stephens 2007	Days of marijuana use per week	12 months	4.65 (SD 2.2) vs. 5.58 (SD 2.2)
	Dependence symptoms		2.43 (SD 1.42) vs. 2.88 (SD 1.42)

Table 7. Motivational interviewing versus assessment and feedback: extent of substance use as reported *(Continued)*

	Number of problems		3.95 (SD 3.15) vs. 5.21 (SD 3.15)
	Periods smoked per day		1.79 (SD 0.94) vs. 1.97 (SD 0.94)
White 2006	Freq alcohol use past month	15 months	1.87 (SD 1.15) vs. 2.11 (SD 1.24)
	Freq marijuana past month		1.15 (SD 1.5) vs. 1.39 (SD 2.31)
	Heavy drinking		1.75 (SD 2.39) vs. 2.13 (SD 3.33)
	Drinks in typical week		6.84 (SD 7.77) vs. 8.29 (SD 11.45)
	Peak BAC		0.05 (SD 0.05) vs. 0.06 (SD 0.06)

BAC: blood alcohol concentration; **CI:** confidence interval; **Freq:** frequency; **GAS:** Global assessment scale; **OR:** odds ratio; **SEC:** standard ethanol content; **SD:** standard deviation; **vs:** versus

Table 8. Motivational interviewing versus other active intervention: extent of substance use as reported

Study	Outcome as reported in the study	Follow-up as reported in the study	Results (MI vs. other active intervention)
Post-intervention			
Aharonovich 2017	Number of days with primary drug use (prior 30 days)	2 months	3.61 (SD 5.79) vs. 5.07 (SD 6.70)
	Reduction in drug use		RR 0.68 (95% CI 0.43 to 1.080)
Anton 2005	Drinks per drinking day	Post	4.4 (SD 4.5) vs. 4 (SD 4.7)
	Percent days abstinent		75 (SD 32) vs. 79 (SD 26)
Kadden 2007	MET+CBT+ContM vs. MET+CBT vs. ContM vs. CaseM:	Post	0.1 (SD 0.1) vs. 0.09 (SD 0.11) vs. 0.12 (SD 0.15) vs. 0.09 (SD 0.12)
	ASI alcohol		0.12 (SD 0.09) vs. 0.15 (SD 0.12) vs. 0.1 (SD 0.09) vs. 0.14 (SD 0.1)
	ASI drug		2.32 (SD 2.98) vs. 2.45 (SD 3.08) vs. 1.63 (SD 2.32) vs. 2.63 (SD 2.81)
	Joints/ day		0.55 (SD 0.43) vs. 0.48 (SD 0.41) vs. 0.68 (SD 0.35) vs. 0.45 (SD 0.38)
	PDA		
Short-term follow-up			
Barnett 2007	Alcohol problems	3 months	3.42 (SD 3.03) vs. 3.03 (SD 2.58)
	Drinks per drinking day		4.77 (SD 2.89) vs. 4.49 (SD 2.41)
	Estimated BAC		0.08 (SD 0.06) vs. 0.09 (SD 0.06)
	Drinking days		4.74 (SD 3.83) vs. 4.75 (SD 4.37)
	Heavy drinking days		2.41 (SD 2.84) vs. 2.08 (SD 2.61)
Borsari 2005	Binge episodes	3 months	6.83 (SD 4.11) vs. 7.13 (SD 4.81)
	Drinks per week		18.1 (SD 11.96) vs. 17.72 (SD 10.49)

Table 8. Motivational interviewing versus other active intervention: extent of substance use as reported *(Continued)*

	Peak BAC		0.17 (SD 0.08) vs. 0.15 (SD 0.11)
	RAPI		5.9 (SD 5.56) vs. 5.73 (SD 4.84)
	Typical BAC		0.08 (SD 0.05) vs. 0.07 (SD 0.06)
Carroll 2006b	Longest duration of continuous abstinence (days)	2 months	21.5 (SD 20.2) vs. 17.3 (SD 27.3)
	Marijuana negative urine specimens		1.3 (SD 2.13) vs. 0.9 (SD 2.12)
Chanut 2007	AUDIT score	3 months	11.42 (SD 6.44) vs. 13.9 (SD 6.84)
	Percent high-risk drinking days		71 (SD 32.35) vs. 67.8 (SD 31.73)
Colby 2018	Percent drinking days	6 weeks	19.17 (SD 16.33) vs. 23.63 (SD 18.66)
	Percent heavy drinking days	3 months	10.03 (SD 13.3) vs. 16.09 (SD 15.8)
	Standard drinks per week		7.06 (SD 8.04) vs. 11.0 (SD 10.69)
	Percent drinking days		14.32 (SD 12.23) vs. 19.52 (SD 17.92)
	Standard drinks per week		5.56 (SD 5.91) vs. 8.93 (SD 10.0)
	Percent heavy drinking days		8.04 (SD 9.98) vs. 13.11 (SD 13.94)
De Gee 2014	Cannabis: cannabis days/week	3 months	MD -0.010 (95% -0.62 to 0.61)
	Cannabis: number of joints/week		MD 0.05 (95%CI -2.04 to 2.14)
Dieperink 2014	% days abstinent	3 months	69.91 (SD 31.99) vs. 58.23 (SD 34.05)
	Drinks/week		13.35 (SD 18.86) vs. 19.94 (SD 25.50)
	Heavy drinking days		6.24 (SD 9.31) vs. 8.27 (SD 8.98)
	30-day abstinence		24.1 vs. 13.3%
Kadden 2007	MET+CBT+ContM vs. MET+CBT vs. ContM vs. CaseM:	5 months	2.49 (SD 3.21) vs. 1.77 (SD 2.14) vs. 1.69 (SD 2.28) vs. 2.07 (SD 2.15)
	Joints/ day		0.55 (SD 0.4) vs. 0.5 (SD 0.42) vs. 0.6 (SD 0.37)vs. 0.46 (SD 0.4)
	PDA		
Kahler 2004	Drinks per drinking day	1 month	6.58 (SD 10.49) vs. 7.76 (SD 16.99)
	Drinks per drinking day	3 months	6.29 (SD 12.67) vs. 6.04 (SD 12.9)
Mackiewicz Seghete 2022	Problem drinking (Rutgers Alcohol Problems Index)	3 months	4.25 (n=81) vs. 3.6 (n=87), t=0.82, p=0.413
Martino 2006	Alcohol	1 month	0.33 (SD 0.91) vs. 3.27 (SD 7.21)
	Alcohol	2 months	0.5 (SD 1.37) vs. 5.13 (SD 9.68)
	Alcohol	3 months	0.77 (SD 1.6) vs. 5.36 (SD 9.65)
	Primary drug use	1 month	4 (SD 7.48) vs. 3.13 (SD 4.45)
	Primary drug use	2 months	3.45 (SD 6.84) vs. 5.4 (SD 9.77)

Table 8. Motivational interviewing versus other active intervention: extent of substance use as reported *(Continued)*

	Primary drug use	3 months	4 (SD 6.13) vs. 4.17 (SD 8.6)
	Secondary drug use	1 month	0.64 (SD 1.99) vs. 0.07 (SD 0.26)
	Secondary drug use	2 months	0.77 (SD 1.41) vs. 1.2 (SD 2.6)
	Secondary drug use	3 months	1.91 (SD 4.45) vs. 0.47 (SD 1.25)
McCambridge 2008	30 day frequency alcohol	3 months	4 (SD 5.5) vs. 3.7 (SD 5.7)
	30 day frequency cannabis		14.6 (SD 11.7) vs. 15.9 (SD 11.6)
	AUDIT		4.6 (SD 5.6) vs. 4.9 (SD 5.8)
	Joints per week		10.1 (SD 12.4) vs. 10.1 (SD 12.8)
	Units per week		5.9 (SD 12.1) vs. 5.7 (SD 11.2)
Parsons 2014	Any drug use	3 months	41/ 61 (67.2 %) vs. 44/62 (%)
Slesnick 2013	Percent days of drug and alcohol use (except tobacco) (last 90 days)	3 months	21.76 (SD 28.23) vs. 20.71 (SD 28.45)
Slesnick 2015	Percent days of any drug use except tobacco and alcohol	3 months	45.7 (SD 43.2) vs. 53.6 (SD 49.8)
	Percent days of alcohol use (last 90 days)		8.5 (SD 14.07) vs. 10.36 (SD 15.65)
	Average standard ethanol content (SECs)		2.76 (SD 5.26) vs. 2.7 (SD 5.4)
Stein 2017	Binge-drinking	1 month	RR 1.17 (95%CI 0.897 to 1.52)
	Dual substance use	1 month	RR 1.01 (95%CI 0.74 to 1.39)
	Binge-drinking	3 months	RR 1.09 (95% CI 0.83 to 1.43)
	Dual substance use	3 months	RR 1.16 (95% CI 0.84 to 1.61)
			(not included in meta-analysis)
UKATT 2005	Days abstinent	3 months	42.3 (SD 50.75) vs 43.2 (SD 45.02)
	Drinks per drinking day		17.6 (SD 16.91) vs. 18.2 (SD 14.92)
	Log gamma-glutamyl transferase		3.87 (SD 1.27) vs. 3.9 (SD 1.13)
Walitzer 2009	Percent days abstinent	3 months	69.6 (SD 31.7) vs. 80.6 (SD 22.6)
	Percent days heavy drinking		9.4 (SD 18.6) vs. 6.1 (SD 14.1)
Wood 2007	Alcohol consumption past 30 days	1 month	73.46 (SD 41.33) vs. 77.24 (SD 46.64)
	Alcohol consumption past 30 days	3 months	75.86 (SD 47.06) vs. 80.09 (SD 46.74)
Medium-term follow-up			
Aharonovich 2017	Reduction in drug use	6 months	RR 0.49 (95%CI 0.29 to 0.85)

Table 8. Motivational interviewing versus other active intervention: extent of substance use as reported *(Continued)*

			(not included in meta-analysis)
Borsari 2005	Binge episodes	6 months	6.1 (SD 4.07) vs. 6.07 (SD 4.71)
	Drinks per week		18.69 (SD 9.75) vs. 21.04 (SD 14.22)
	Peak BAC		0.16 (SD 0.12) vs. 0.16 (SD 0.14)
	RAPI		5 (SD 5.09) vs. 6.71 (SD 5.21)
	Typical BAC		0.07 (SD 0.06) vs. 0.07 (SD 0.05)
Chanut 2007	AUDIT score	6 months	10.72 (SD 6.45) vs. 13.07 (SD 5.34)
	Percent high-risk drinking days		55 (SD 37.42) vs. 69.33 (SD 30.74)
De Wildt 2002	Number of abstinent days	6 months	119.1 (SD 135.5) vs. 108.5 (SD 71.2)
	Time to first relapse		65.5 (SD 7) vs. 53.4 (SD 65)
Dieperink 2014	% days abstinent	6 months	73.15 (SD 32.18) vs. 59.49 (SD 35.30)
	Drinks/week		14.88 (SD 27.94) vs. 21.41 (SD 29.39)
	Heavy drinking days		5.10 (SD 8.10) vs. 7.38 (SD 9.53)
	30-day abstinence		25.4 vs. 19.7%
Feldstein Ewing 2021	Alcohol dependence (AUDIT)	6 months	5.75 (SD 10.19) vs. 6.78 (SD9.44)
	Alcohol use (quantity and frequency)		-0.04 (SD 0.86) vs. 0.1 (SD 0.89)
	Cannabis use (quantity and frequency)		0.37 (SD 0.41) vs. 0.36 (SD 0.4)
Kadden 2007	MET+CBT+ContM vs. MET+CBT vs. ContM vs. CaseM:	8 months 11 months	0.11 (SD 0.13) vs. 0.09 (SD 0.11) vs. 0.13 (SD 0.13)vs. 0.1 (SD 0.1)
	ASI alcohol		0.12 (SD 0.11) vs.0.15 (SD 0.11) vs. 0.12 (SD 0.09) vs. 0.14 (SD 0.1)
	ASI drug		2.27 (SD 3.32) vs. 1.73 (SD 1.79) vs. 2.06 (SD 2.27)
	Joints/ day		0.49 (SD 0.41) vs. 0.42 (SD 0.42) vs. 4.12 (SD 17.11) vs. 0.68 (SD 0.35) vs. 0.41 (SD 0.4)
	PDA		1.75 (SD 2.34) vs.1.86 (SD 2.32) vs. 1.63 (SD 2.04) vs. 2.1 (SD 3.15)
	Joints/ day		0.52 (SD 0.44) vs. 0.45 (SD 0.43) vs. 0.48 (SD 0.41) vs. 0.48 (SD 0.42)
	PDA		
Kahler 2004	Drinks per drinking day	6 months	2.57 (SD 5.92) vs. 6.71 (SD 13.64)
Logan 2015	Drinks per week	6 months	RD -0.90 (SD 0.58)
	eBAC		RD -0.013 (SD 0.005)
			(not included in meta-analysis)
Mackiewicz Seghete 2022	Problem drinking (Rutgers Alcohol Problems Index)	6 months	4.03 (n=72) vs. 4.27 (n=81), t=-0.26, p=0.793

Table 8. Motivational interviewing versus other active intervention: extent of substance use as reported *(Continued)*

Match 1993	Drinking consequences	9 months	20 (SD 26.8) vs. 19.6 (SD 27.9)
	GGT		70 (SD 100.5) vs. 77.7 (SD 106.1)
	Drinking consequences		20 (SD 26.8) vs. 19.4 (SD 28.3)
	GGT		70 (SD 100.5) vs. 74.2 (SD 96.8)
	Drinking consequences		23.5 (SD 23.2) vs. 21.4 (SD 24.3)
	GGT		66.3 (SD 81.6) vs. 65.8 (SD 74.8)
	Drinking consequences		23.5 (SD 23.2) vs. 16.7 (SD 21.8)
	GGT		66.3 (SD 81.6) vs. 61.1 (SD 76.2)
McCambrigde 2008	30 day frequency alcohol	6 months	4 (SD 5.6) vs. 4.2 (SD 6.3)
	30 day frequency cannabis		13.8 (SD 11.9) vs. 14.5 (SD 11.8)
	AUDIT		4.6 (SD 5.2) vs. 4.9 (SD 5.5)
	Joints per week		8.5 (SD 11.1) vs. 10.5 (SD 14.7)
	Units per week		4.7 (SD 9.9) vs. 8.3 (SD 22.8)
Parsons 2014	Any drug use	6 months	34/54 (62.96 %) vs. 41/55 (74.5%)
Slesnick 2013	Drug and alcohol use (except tobacco)	6 months	17.633 (SD 28.13) vs. 21.45 (SD 23.88)
	Drug and alcohol use (except tobacco)	9 months	14.69 (SD 14.12) vs. 29.34 (SD 17.19)
Slesnick 2015	Percent days of any drug use except tobacco and alcohol	6 months	48.36 (SD 40.85) vs. 41.2 (SD 39.1)
	Percent days of alcohol use (last 90 days)		6.23 (SD 14.93) vs. 8.8 (SD 18.27)
	Average standard ethanol content (SECs)		1.61 (SD 2.32) vs. 1.69 (SD 2.31)
Stein 2017	Binge-drinking	6 months	RR 1.04 (95% CI 0.78 to 1.39)
	Dual substance use	6 months	RR 0.97 (95% CI 0.69 to 1.38)
	Binge-drinking	9 months	RR 0.82 (95%CI 0.6 to 1.1)
	Dual substance use	9 months	RR 0.8 (95% CI 0.56 to 1.14)
			(not included in meta-analysis)
Walitzer 2009	Percent days abstinent	6 months	66.1 (SD 36.6) vs. 79.1 (SD 25.3)
	Percent days abstinent	9 months	63.6 (SD 35.1) vs. 80.5 (SD 21.8)
	Percent days heavy drinking	6 months	9.6 (SD 21.1) vs. 8.1 (SD 20.4)
	Percent days heavy drinking	9 months	11.7 (SD 22.9) vs. 7.5 (SD 18.6)
Wood 2007	Alcohol consumption past 30 days	6 months	72.99 (SD 53.36) vs. 84 (SD 55.41)

Table 8. Motivational interviewing versus other active intervention: extent of substance use as reported *(Continued)*

Long-term follow-up			
Alderson 2020	Reduction in drug use	12 months	RR 0.54 (95% CI 0.31 to 0.94)
	AUDIT (hazardous alcohol)		12/17 (71%) vs. 7/23 (30%)
	ASSIST-Y (drug use): cannabis:		12/17 (70.5%) vs. 14/23 (61%)
	ASSIST-Y (drug use): cocaine		8/17 (47%) vs. 5/23 (22%)
	ASSIST-Y (drug use): amphetamine		7/17 (41%) vs. 7/23 (30%)
	ASSIST-Y (drug use): sedative		6/17 (35%) vs. 4/23 (17%)
	ASSIST-Y (drug use): hallucinogens		4/17 (23.5%) vs. 3/23 (13%)
	ASSIST-Y (drug use): novel psychoactive substance		3/17 (18%) vs. 3/23 (13%)
	ASSIST-Y (drug use): opioids		2/17 (12%) vs. 1/23 (4%)
	ASSIST-Y (drug use): inhalants		2/17 (12%) vs. 1/23 (4%)
	ASSIST-Y (drug use): other		0 vs. 0/23 (0%)
	ASSIST-Y (drug use): episodes of heavy drinking: median 1 (IQR 0-4), range: 0-10 (n=17)		Median 1 (IQR 0-4), range: 0-10 vs.median 0 (IQR 0-2), range: 0-7
Barnett 2007	Alcohol problems	12 months	2.98 (SD 2.59) vs. 3.17 (SD 3.05)
	Drinks per drinking day		4.64 (SD 2.78) vs. 4.87 (SD 2.86)
	Estimated BAC		0.08 (SD 0.05) vs. 0.09 (SD 0.06)
	Drinking days		6.37 (SD 4.67) vs. 5.89 (SD 4.01)
	Heavy drinking days		3.21 (SD 3.91) vs. 2.95 (SD 3.56)
Kadden 2007	MET+CBT+ContM vs. MET+CBT vs. ContM vs. CaseM:	14 months	0.09 (SD 0.14) vs.0.07 (SD 0.08) vs. 0.12 (SD 0.16) vs. 0.09 (SD 0.12)
	ASI alcohol		0.13 (SD 0.1) vs. 0.12 (SD 0.12) vs. 0.12 (SD 0.09) vs. 0.11 (SD 0.09)
	ASI drug		114.57 (SD 134.34) vs. 98.71 (SD 122.82) vs. 108.88 (SD 116.09) vs. 84.14 (SD 99.07)
	Days of continuous abstinence		0.63 (SD 0.75) vs. 0.55 (SD 0.77) vs. 0.57 (SD 0.74) vs. 0.58 (SD 0.65)
	Joints /day		0.51 (SD 0.41) vs. 0.48 (SD 0.42) vs. 0.38 (SD 0.42) vs. 0.53 (SD 0.42)
	PDA		
Mackiewicz Seghete 2022	Problem drinking (Rutgers Alcohol Problems Index)	12 months	2.75 (n=75) vs. 4.88 (n=81), t=-2.42, p=0.0173
Match 1993	Drinking consequences	15 months	16.9 (SD 23.1) vs. 19.3 (SD 29.3)
	GGT		58 (SD 80.6) vs. 81 (SD 109.2)
	Drinking consequences		16.9 (SD 23.1) vs. 21.2 (SD 29)

Table 8. Motivational interviewing versus other active intervention: extent of substance use as reported *(Continued)*

	GGT		58 (SD 80.6) vs. 77.2 (SD 101.4)
	Drinking consequences		19.9 (SD 23.4) vs. 19.7 (SD 21.1)
	GGT		67.8 (SD 82.8) vs. 71.8 (SD 87.3)
	Drinking consequences		19.9 (SD 23.4) vs. 15.9 (SD 20.7)
	GGT		67.8 (SD 82.8) vs. 61.7 (SD 75.3)
Parsons 2014	Any drug use	12 months	33/59 (55.9%) vs. 33/54 (61.1 %)
Slesnick 2013	Drug and alcohol use (except tobacco)	12 months	15.89 (SD 10.18) vs. 24.63 (SD 17.89)
		18 months	21.66 (SD 21.54) vs. 26.83 (SD 20.86)
	Drug and alcohol use (except tobacco)	24 months	26.34 (SD 19.19) vs. 33.63 (SD 23.14)
	Drug and alcohol use (except tobacco)		
Slesnick 2015	Percent days of any drug use except tobacco and alcohol	12 months	49.21 (SD 40.97) vs. 40.17 (SD 39.87)
	Percent days of alcohol use (last 90 days)		8.94 (SD 18.41) vs. 6.66 (SD 11.82)
	Average standard ethanol content (SECs)		1.65 (SD 3.24) vs. 1.89 (SD 3.91)
Stein 2017	Binge-drinking	12 months	RR 0.88 (95% CI 0.65 to 1.2)
	Dual substance use	12 months	RR 0.89 (95% CI 0.61 to 1.3)
	Binge-drinking	15 months	RR 0.86 (95% CI 0.63 to 1.17)
	Dual substance use	15 months	RR 0.81 (95% CI 0.56 to 1.17)
			(not included in meta-analysis)
UKATT 2005	Days abstinent	12 months	45.4 (SD 55.83) vs. 46.6 (SD 49.44)
	Drinks per drinking day		18.7 (SD 19.32) vs. 19.8 (SD 16.94)
	Log gamma-glutamyl transferase		4.01 (SD 1.61) vs. 4 (SD 1.45)
Walitzer 2009	Percent days abstinent	12 months	67.4 (SD 33.8) vs. 83.8 (SD 20.9)
	Percent days heavy drinking		9.9 (SD 23.5) vs.7.9 (SD 18.8)

ASI: Addiction severity index; **ASSIST-Y:** Alcohol, Smoking and Substance Involvement Screening Test-Youth; **AUDIT:** Alcohol Use Disorders Identification Test; **BAC:** blood alcohol concentration; **CBT:** cognitive behavioral therapy; **CDC:** Centers for Disease Control and Prevention; **CI:** confidence interval; **GGT:** gammaglutamyl transferase; **ContM:** contingency management; **IQR:** interquartile range; **FDA:** Food and Drug Administration; **MET:** motivational enhancement therapy; **MD:** mean difference; **n:** number of participants; **PDA:** proportion of days abstinent; **RAPI:** Rutgers Alcohol Problems Index; **RR:** relative risk; **SD:** standard deviation

APPENDICES

Appendix 1. Ovid MEDLINE

1950 to November Week 3 2010

1 Interview, Psychological/
2 Feedback, Psychological/
3 (interview$ or feedback$ or enhancement).tw.
4 or/1-3
5 Motivation/
6 motivational$.tw.
7 or/5-6
8 4 and 7
9 exp Substance-Related Disorders/
10 ((drug or substance$ or alcohol or opioid$ or amphetamine$ or cocaine or marijuana or cannabis or phencyclidine or benzodiaz$) adj2 (misuse or abuse$ or addict$ or depend$)).tw.
11 (alcoholi$ or drinker$ or drinking$).tw.
12 exp benzodiazepines/
13 or/9-12
14 8 and 13
15 clinical trial.pt.
16 randomized controlled trial.pt.
17 controlled clinical trial.pt
18 randomized.ti,ab.
19 placebo.ti,ab.
20 dt.fs.
21 randomly.ti,ab.
22 trial.ti,ab.
23 groups.ti,ab.
24 control$.ti,ab.
25 quasi$.ti,ab.
26 cluster$.ti,ab.
27 or/15-26
28 Animals/
29 Humans/
30 28 not (28 and 29)
31 27 not 30
32 31 and 14

Updated search from 1946 to 3 November 2022

1 Interview, Psychological/

2 Feedback, Psychological/

3 (interview$ or feedback$ or enhancement).tw.

4 (((behavio?r$ adj2 change) or adherence or compliance or consultation) adj2 therapy).tw.

5 1 or 2 or 3 or 4

6 Motivation/

7 motivational$.tw.

8 6 or 7

9 5 and 8

10 Motivational Interviewing/

11 9 or 10

12 exp Substance-Related Disorders/

13 ((drug or substance$ or alcohol or opioid$ or amphetamine$ or cocaine or marijuana or cannabis or cannabinoid$ or opiate$ or MDMA or phencyclidine or benzodiaz$) adj3 (misuse or abuse$ or addict$ or depend$)).tw.

14 ((ecstasy or crack or crystal or analgesic$ or stimulant$ or methamphetamine$ or heroin$ or entactogenic$ or sedative$ or hypnotic$ or barbiturate$ or ketamine or anesthetic$ or khat or hashish or weed or hallucinogen$) adj3 (misuse or abuse$ or addict$ or depend$)).tw.

15 (alcoholi$ or drinker$ or drinking$).tw.

16 exp benzodiazepines/

17 12 or 13 or 14 or 15 or 16

18 11 and 17

19 randomized controlled trial.pt.

20 controlled clinical trial.pt.

21 random*.ab.

22 placebo.ab.

23 clinical trials as topic.sh.

24 random allocation.sh.

25 trial.ti.

26 19 or 20 or 21 or 22 or 23 or 24 or 25

27 exp animals/ not humans.sh.

28 26 not 27

29 18 and 28

30 limit 29 to yr="2010 -Current"

Appendix 2. Ovid EMBASE

1980 to week 46 2010
Date: 30.11.2010
1 exp interview/
2 (interview$ or feedback$ or enhancement).tw.
3 or/1-2
4 motivation/
5 Motivational$.tw.
6 or/4-5
7 Substance Abuse/
8 exp drug abuse/
9 exp Alcohol Abuse/
10 exp Drug Dependence/
11 Alcoholism/
12 Addiction/
13 Withdrawal Syndrome/
14 ((drug or substance$ or alcohol or opioid$ or amphetamine$ or cocaine or marijuana or cannabis or phencyclidine or benzodiaz$) adj2 (misuse or abuse$ or addict$ or depend$)).tw.
15 (alcoholi$ or drinker$ or drinking$).tw.
16 or/7-15
17 3 and 6 and 16
18 Clinical Trial/
19 Randomized Controlled Trial/
20 Randomization/
21 Double Blind Procedure/
22 Single Blind Procedure/
23 Crossover Procedure/

24 PLACEBO/
25 placebo$.tw.
26 randomi?ed controlled trial$.tw.
27 rct.tw.
28 random allocation.tw.
29 randomly allocated.tw.
30 allocated randomly.tw.
31 (allocated adj2 random).tw.
32 single blind$.tw.
33 double blind$.tw.
34 ((treble or triple) adj blind$).tw.
35 Prospective study/
36 or/18-35
37 Case study/
38 case report.tw.
39 Abstract report/
40 Letter/
41 Human/
42 Nonhuman/
43 ANIMAL/
44 Animal Experiment/
45 42 or 43 or 44
46 45 not (41 and 45)
47 or/37-40,46
48 36 not 47
49 control$.ti,ab.
50 quasi$.ti,ab.
51 cluster$.ti,ab.
52 or/49-51
53 36 or 52
54 53 not 47
55 54 and 17

Updated search from 1974 to 3 November 2022

1 exp interview/

2 (interview$ or feedback$ or enhancement).tw.

3 (((behavio?r$ adj2 change) or adherence or compliance or consultation) adj2 therapy).tw.

4 1 or 2 or 3

5 Motivation/

6 Motivational$.tw.

7 5 or 6

8 4 and 7

9 motivational interviewing/

10 8 or 9

11 Substance Abuse/

12 exp drug abuse/

13 exp Alcohol Abuse/

14 exp Drug Dependence/

15 Alcoholism/

16 Addiction/

17 Withdrawal Syndrome/

18 ((drug or substance$ or alcohol or opioid$ or amphetamine$ or cocaine or marijuana or cannabis or cannabinoid$ or opiate$ or MDMA or phencyclidine or benzodiaz$) adj3 (misuse or abuse$ or addict$ or depend$)).tw.

19 ((ecstasy or crack or crystal or analgesic$ or stimulant$ or methamphetamine$ or heroin$ or entactogenic$ or sedative$ or hypnotic$ or barbiturate$ or ketamine or anesthetic$ or khat or hashish or weed or hallucinogen$) adj3 (misuse or abuse$ or addict$ or depend$)).tw.

20 (alcoholi$ or drinker$ or drinking$).tw.

21 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20

22 10 and 21

23 Clinical-Trial/ or Randomized-Controlled-Trial/ or Randomization/ or Single-Blind-Procedure/ or Double-Blind-Procedure/ or Crossover-Procedure/ or Prospective-Study/ or Placebo/

24 (((clinical or control or controlled) adj (study or trial)) or ((single or double or triple) adj (blind$3 or mask$3)) or (random$ adj (assign $ or allocat$ or group or grouped or patients or study or trial or distribut$)) or (crossover adj (design or study or trial)) or placebo or placebos).ti,ab.

25 23 or 24

26 22 and 25

27 limit 26 to yr="2010 -Current"

Appendix 3. Ovid PsycINFO

Search from 1806 to November week 4 2010

Date: 30 November 2010

1 exp motivational interviewing/

2 (interview$ or feedback$ or enhancement$).tw.

3 Motivational$.tw.

4 2 and 3

5 1 or 4

6 exp drug abuse/

7 exp addiction/

8 ((drug or substance$ or alcohol or opioid$ or amphetamine$ or cocaine or marijuana or cannabis or phencyclidine or benzodiaz$) adj2

(misuse or abuse$ or addict$ or depend$)).tw.

9 (alcoholi$ or drinker$ or drinking$).tw.

10 or/6-9

11 methodology/

12 data collection/

13 empirical methods/

14 Experimental methods/

15 Quasi experimental methods/

16 experimental design/

17 between groups design/

18 followup studies/

19 exp longitudinal studies/

20 repeated measures/

21 experimental subjects/

22 experiment controls/

23 experimental replication/

24 exp "sampling (experimental)"/

25 placebo/

26 clinical trials/

27 exp treatment outcomes/

28 treatment eHectiveness evaluation/

29 empirical study.md.

30 experimental replication.md.

31 followup study.md.

32 longitudinal study.md.

33 meta analysis.md.

34 prospective study.md.

35 retrospective study.md.

36 treatment outcome clinical trial.md.

37 placebo$.tw.

38 randomi?ed controlled trial$.tw.

39 rct.tw.

40 random allocation.tw.

41 (randomly adj1 allocated).tw.

42 (allocated adj2 random).tw.

43 ((singl$ or doubl$ or treb$ or tripl$) adj (blind$3 or mask$3)).tw.

44 (clinic$ adj (trial? or stud$3)).tw.

45 or/11-44

46 comment reply.dt.

47 editorial.dt.

48 letter.dt.

49 clinical case study.md.

50 nonclinical case study.md.

51 animal.po.

52 human.po.

53 51 not (51 and 52)

54 or/46-50,53

55 45 not 54

56 control$.ti,ab.

57 quasi$.ti,ab.

58 cluster$.ti,ab.

59 or/56-58

60 45 or 59

61 60 not 54

62 5 and 10 and 61

Updated search from 1806 to February week 4 2021
1 motivational interviewing/

2 (interview$ or feedback$ or enhancement$).tw.

3 Motivational$.tw.

4 2 and 3

5 1 or 4

6 exp drug abuse/

7 exp addiction/

8 ((drug or substance$ or alcohol or opioid$ or amphetamine$ or cocaine or marijuana or cannabis or cannabinoid$ or opiate$ or MDMA or phencyclidine or benzodiaz$) adj3 (misuse or abuse$ or addict$ or depend$)).tw.

9 ((ecstasy or crack or crystal or analgesic$ or stimulant$ or methamphetamine$ or heroin$ or entactogenic$ or sedative$ or hypnotic$ or barbiturate$ or ketamine or anesthetic$ or khat or hashish or weed or hallucinogen$) adj3 (misuse or abuse$ or addict$ or depend$)).tw.

10 (alcoholi$ or drinker$ or drinking$).tw.

11 6 or 7 or 8 or 9 or 10

12 5 and 11

13 exp Clinical Trials/

14 (random* or (clinical adj3 trial*) or (reserch adj3 design*) or (evaluat adj3 stud*) or (prospective* adj3 stud*)).tw.

15 ((singl* or doubl* or trebl* or tripl*) adj3 (blind* or mask*)).tw.

16 13 or 14 or 15

17 12 and 16

18 limit 17 to yr="2010 -Current"

Appendix 4. Wiley; Cochrane Library

Wiley; Cochrane Library, Clinical Trials

Date: 30 November 2010

#1 MeSH descriptor Interview, Psychological explode all trees

#2 MeSH descriptor Feedback, Psychological explode all trees

#3 (interview* or feedback* or enhancement):ab,ti

#4 (#1 OR #2 OR #3)

#5 MeSH descriptor Motivation explode all trees

#6 motivational*:ti,ab

#7 (#5 OR #6)

#8 (#4 AND #7)

#9 MeSH descriptor Substance-Related Disorders explode all trees

#10 MeSH descriptor Benzodiazepines explode all trees

#11 ((drug or substance* or alcohol or opioid* or amphetamine* or cocaine or marijuana or cannabis or phencyclidine or benzodiaz*)

near/2 (misuse or abuse* or addict* or depend*)):ti,ab

#12 (alcoholi* or drinker* or drinking*):ti,ab

#13 (#9 OR #10 OR #11 OR #12)

Update search in the CDAG Register (searched via the Cochrane Register of Studies)

Date: 03 March 2021, update search on 3 November 2022

#1 (motivational*):XIN AND INREGISTER

#2 MESH DESCRIPTOR Motivational Interviewing EXPLODE ALL AND INREGISTER

#3 (MI):XIN AND INREGISTER

#4 (((((behavior* NEAR2 change) or adherence or compliance or consultation or enhancement) NEAR2 therapy)):TI):AB AND INREGISTER

#5 MESH DESCRIPTOR Interview, Psychological AND INREGISTER

#6 MESH DESCRIPTOR Feedback, Psychological EXPLODE ALL AND INREGISTER

#7 ((((interview* or feedback* or enhancement)):TI):AB):XKW AND INREGISTER

#8 #5 OR #6 OR #7

#9 motivational* AND INREGISTER

#10 MESH DESCRIPTOR Motivation EXPLODE ALL AND INREGISTER

#11 #9 OR #10

#12 #11 AND #8

#13 #1 OR #2 OR #3 OR #4 OR #12

#14 2010 TO 2021:YR AND INREGISTER

#15 #14 AND #13

Updated search in the Cochrane Central Register of Controlled Trials (CENTRAL 2021, Issue 2) (searched via the Cochrane Register of Studies)

Date: 3 March 2021

#1 MESH DESCRIPTOR Substance-Related Disorders EXPLODE ALL AND CENTRAL:TARGET

#2 (((((drug or substance* or alcohol or opioid* or amphetamine* or cocaine or marijuana or cannabis or cannabinoid* or opiate* or MDMA or phencyclidine or benzodiaz*) NEAR (misuse or abuse* or addict* or depend*))):TI):AB):XKW AND CENTRAL:TARGET

#3 (ecstasy or crack or crystal or analgesic* or stimulant* or methamphetamine* or heroin* or entactogenic* or sedative* or hypnotic* or barbiturate* or ketamine or anesthetic* or khat or hashish or weed or hallucinogen*) NEAR (misuse or abuse* or addict* or depend*) AND CENTRAL:TARGET

#4 ((alcoholi* or drinker* or drinking*):TI):AB AND CENTRAL:TARGET

#5 #1 OR #2 OR #3 OR #4

#6 MESH DESCRIPTOR Interview, Psychological EXPLODE ALL AND CENTRAL:TARGET

#7 MESH DESCRIPTOR Feedback, Psychological EXPLODE ALL AND CENTRAL:TARGET

#8 ((((interview* or feedback* or enhancement)):TI):AB):XKW AND CENTRAL:TARGET

#9 #6 OR #7 OR #8

#10 MESH DESCRIPTOR Motivation EXPLODE ALL AND CENTRAL:TARGET

#11 ((motivational*):TI):AB AND CENTRAL:TARGET

#12 #10 OR #11

#13 #9 AND #12

Appendix 5. Ovid PsychExtra

1908 to 14 January 2008
Date: 21 January 2008
Note: RCT-filter not used

1 exp CRIMINALS/
2 exp CRIME/
3 exp Correctional Institutions/
4 exp PRISONERS/
5 (prison$ or imprison$ or offender$ or offence$ or incarcerat$ or crim$ or jail$ or delinq$ or punish$ or convict$ or penitentiar$ or correctional or penal or inmate$ or captive$).tw.
6 or/1-5
7 Motivational Interviewing/
8 (interview$ or feedback$ or enhancement therap$).tw.
9 Motivational$.tw.
10 8 and 9
11 7 or 10
12 exp drug abuse/
13 exp addiction/
14 ((drug or substance$ or alcohol or opioid$ or amphetamine$ or cocaine or marijuana or cannabis or phencyclidine or benzodiaz$) adj2 (misuse or abuse$ or addict$ or depend$)).tw.
15 or/12-14
16 6 and 11 and 15
17 11 and 15

Appendix 6. International Bibliography of the Social Sciences

1951 to November week 3 2009, update search on 23 March 2022
Note: RCT-filter not used

1 exp motivation/
2 motivational*.tw.
3 or/1-2
4 exp interviews/
5 (interview* or feedback* or enhancement).tw.
6 or/4-5
7 3 and 6
8 exp drug addiction/ or exp drug addicts/
9 exp "drug use"/
10 exp drug users/

11 ((drug or substance* or alcohol or opioid* or amphetamine* or cocaine or marijuana or cannabis or phencyclidine or benzodiaz*) adj2 (misuse or abuse* or addict* or depend*)).tw.
12 exp cannabis/
13 exp drugs/
14 exp alcohol/
15 exp alcoholism/
16 addiction/ or addicts/
17 exp "substance use"/
18 (alcoholi* or drinker* or drinking*).tw.
19 or/8-18
20 7 and 19

Appendix 7. ISI Web of Science (Thomson)

Date: 30 November 2010

Note: RCT-filter not used

#7 #6 AND #3

Databases=SCI-EXPANDED, SSCI, A&HCI Timespan=All Years

C#6 #5 AND #4

Databases=SCI-EXPANDED, SSCI, A&HCI Timespan=All Years

_#5 Topic=(motivational*)

Databases=SCI-EXPANDED, SSCI, A&HCI Timespan=All Years

#4 Topic=(interview* or feedback* or enhancement)

Databases=SCI-EXPANDED, SSCI, A&HCI Timespan=All Years

#3 #2 OR #1

Databases=SCI-EXPANDED, SSCI, A&HCI Timespan=All Years

#2 Topic=(alcoholi* or drinker* or drinking*)

Databases=SCI-EXPANDED, SSCI, A&HCI Timespan=All Years

#1 Topic=((((drug or substance* or alcohol or opioid* or amphetamine* or cocaine or marijuana or cannabis or phencyclidine or benzodiaz*) same (misuse or abuse* or addict* or depend*))))

Databases=SCI-EXPANDED, SSCI, A&HCI Timespan=All Years

Updated search:

Date: 3 March 2021

#10 #8 AND #7 Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=2010-2021

#9 #8 AND #7 Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years

#8 TS=(randomised OR randomized OR randomisation OR randomisation OR placebo* OR (random* AND (allocat* OR assign*)) OR (blind* AND (single OR double OR treble OR triple))) Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years

#7 #6 AND #3 Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years

#6 #5 AND #4 Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years

#5 TS=(motivational*) Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years

#4 TS=(interview* or feedback* or enhancement) Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years

#3 #2 OR #1 Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years

#2 TS= ((ecstasy or crack or crystal or analgesic* or stimulant* or methamphetamine* or heroin* or entactogenic* or sedative* or hypnotic* or barbiturate* or ketamine or anesthetic* or khat or hashish or weed or hallucinogen*) NEAR/3 (misuse or abuse* or addict* or depend*)) Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years

#1 TS=drug or substance* or alcohol or opioid* or amphetamine* or cocaine or marijuana or cannabis or cannabinoid* or opiate* or MDMA or phencyclidine or benzodiaz*) NEAR/3 (misuse or abuse* or addict* or depend*)) Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years

Appendix 8. C2-SPECTR

Date: 23 November 2009
Note: RCT-filter not used

interview or enhancement or feedback AND (motivational or motivation)

No update search has been performed in 2022 as we had no access.

Appendix 9. Sociological Abstracts

CSA Illumina
Date: 30 November 2010, update search on 23 March 2022
Note: RCT-filter not used

(((drug or substance* or alcohol or opioid* or amphetamine* or cocaine or marijuana or cannabis or phencyclidine or benzodiaz*) within 2 (misuse or abuse* or addict* or depend*)) or (alcoholi* or drinker* or drinking*) or (DE=("addiction" or "drug addiction" or "drug injection" or "drugs" or "narcotic drugs" or "opiates" or "heroin" or "psychedelic drugs" or "lysergic acid diethylamide" or "tranquilizing drugs")) or (DE=("substance abuse" or "alcohol abuse" or "drug abuse" or "drug addiction"))) and (((interview* or feedback* or enhancement) or (DE="feedback") or (DE="interviews")) and ((motivational*) or (DE="motivation")))

Appendix 10. SveMed+

Date: 30 November 2010, update search on 23 March 2022
Note: RCT-filter not used
Search term: motivational

Appendix 11. Bibliograpy of Nordic Criminology

Date: 23 November 2009, update search on 23 March 2022
Note: RCT-filter not used

Search term: motivational

Appendix 12. CINCH

Date: 30 November 2010, update search on 23 March 2022
Note: RCT-filter not used

Search term: +motivational

Appendix 13. NCJRS

Date: 30 November 2010, update search on 23 March 2022
Note: RCT-filter not used

Search term:

Subject: motivational (Site search)

Appendix 14. Springerlink

Date: 2 October 2010, update search on 23 March 2022
Note: RCT-filter not used

Search terms:

Summary: motivational and (interview* or feedback* or enhancement*)

Appendix 15. Wiley Interscience

Date: 2 December 2010, update search on 23 March 2022
Note: RCT-filter not used

Search terms: motivational and (interview* or feedback* or enhancement*) in article titles

Appendix 16. Drug Data (formerly DrugScope Library)

Date: 2 December 2010
Note: RCT-filter not used

Search terms:

Title or Subject: motivational interview* or motivational feedback* or motivational enhancement*

For this update, we did not search the former DrugScope library, which existed until 2005. The current DrugWise website does not provide a library.

Appendix 17. Electronic Library of the National Documentation Centre on Drug Use (NCD)

Date: 2 December 2010, update search on 23 March 2022
Note: RCT-filter not used

Search term: Motivational

Appendix 18. Google

Date: 2 February 2009, update search on 23 March 2022

research OR evaluation OR evaluations OR outcome OR outcomes OR effect OR effects OR trial OR trials OR study OR studies "motivational interviewing"
First 100 hits

Appendix 19. Google Scholar

Date: 2 February 2009, update search on 23 March 2022

research OR evaluation OR evaluations OR outcome OR outcomes OR effect OR effects OR trial OR trials OR study OR studies "motivational interviewing"
First 100 hits

WHAT'S NEW

Date	Event	Description
12 December 2023	New citation required but conclusions have not changed	Conclusions remain stable, with only minor changes: while the effect of MI vs. no intervention was moderate in the last version, results in the updated version show a small effect, with low certainty of evidence in both versions.
12 December 2023	New search has been performed	We updated the searches in November 2022 and 34 new studies were included in this version. Because studies did not report the secondary outcome of repeat convictions, we did not include this end point in our analyses. New authors have been added. The title has been changed to "Motivational interviewing for substance use reduction".

HISTORY

Protocol first published: Issue 4, 2009
Review first published: Issue 5, 2011

Date	Event	Description
26 September 2011	Feedback has been incorporated	Changes to SoF tables. In some instances "lower" was substituted for "higher" and vice versa.
13 January 2011	Amended	First draft of this review.

CONTRIBUTIONS OF AUTHORS

2011 version of the review: Karlsen conceived of the idea and commissioned the review. All review authors were involved in planning the review. Smedslund wrote the methods section of the protocol. Karlsen and Smedslund wrote the background. Hammerstrøm developed the search strategy and performed the original searches and the final search in November 2010. All authors were involved with screening studies. Smedslund and Berg conducted the risk of bias assessment and data extraction. Berg and Smedslund graded the results. Smedslund performed the analyses and wrote the results and discussion.

2023 review update: Unverzagt and Frese conceived of the idea and commissioned the update of the review. All review authors planned the review. Schwenker, Dietrich, Unverzagt, and Hirpa independently performed title and abstract screening in two teams of two. Schwenker, Dietrich, and Unverzagt independently performed full text review. Schwenker, Dietrich, Unverzagt, and a student assistant extracted data from included studies and rated their risk of bias. Unverzagt and Nothacker independently graded the results. Disagreements were resolved through discussion. Unverzagt undertook data analysis. Schwenker wrote the background section, discussion, and conclusion; Dietrich and Unverzagt critically read and commented on it. Unverzagt and Schwenker wrote the methods section and results. All authors read and approved the final manuscript, which was completed in April 2023. Schwenker was responsible for communication with the editor and reviewers and revised the manuscript in accordance with the reviewers' comments; Unverzagt contributed. All authors read and approved the final revised manuscript, which was completed in August 2023.

DECLARATIONS OF INTEREST

Rosemarie Schwenker: no conflict of interest known.

Carla Emilia Dietrich: no conflict of interest known.

Selamawit Hirpa: no conflict of interest known.

Monika Nothacker: no conflict of interest known.

Geir Smedslund: no conflict of interest known.

Thomas Frese: no conflict of interest known.

Susanne Unverzagt: no conflict of interest known.

SOURCES OF SUPPORT

Internal sources

- No sources of support provided

External sources

- No sources of support provided

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

Differences between protocol and first version of the review (Smedslund 2011**)**

We excluded studies that recruited participants in emergency rooms and provided one session of motivational interviewing during a stay in the emergency room. Some of the searches in electronic databases are not up-to-date. PsychExtra (search date 14 January 2008) and

International Bibliography of the Social Sciences (November 2009) were not searched in November 2010 because we did not have access. C2 SPECTR and Bibliography of Nordic Criminology were searched on 23 November 2009, and these databases have not been updated since this date. Google and Google Scholar were searched on 2 February 2009, and we did not believe that a new search was worthwhile in November 2010.

In cases where effect size information could not be obtained from the authors of the primary studies, we used effect size data from published systematic reviews and meta-analyses. If necessary, we contacted the authors of the systematic reviews/meta-analyses for more information.

We do not report fixed-effect meta-analyses because we believe that there are systematic differences between the studies, related to differences in interventions given, populations studied, comparison groups, and outcome measures.

We did not do separate analyses for persons with and without mental problems. There was only one study in which the participants were explicitly described as having mental problems (Martino 2006), but mental problems are so frequently co-occurring with substance use that we did not believe it was meaningful to do separate analyses for this variable.

Unused methods

Unit of analysis issues. In cluster-randomised trials, the units of allocation are groups of individuals (e.g. clinics, prisons, geographical areas) rather than the individuals themselves. In such studies, care needs to be taken to avoid unit-of-analysis errors. If we had included cluster-randomised controlled trials in this review update, we planned to use the number of clusters, participants, or mean size of each cluster and the intra-cluster (or intra-class) correlation coefficient (ICC) to correct for inappropriate analyses (in accordance with methods described in Higgins 2017).

INDEX TERMS

Medical Subject Headings (MeSH)

Affect; Motivation; *Motivational Interviewing [methods]; *Substance-Related Disorders [therapy]; Time Factors

MeSH check words

Humans