

ARTICLE

Motivational interviewing: living up to its promise?

Jason Luty & Maciej Iwanowicz

Jason Luty is consultant in liaison addictions psychiatry at Glenfields Hospital, Leicester. He has published in the addictions field and spent 8 years as consultant in addictions at the South Essex Partnership National Health Service Trust (now the Essex Partnership University National Health Service Foundation Trust).

Maciej Iwanowicz is a doctoral student in counselling psychology at Glasgow Caledonian University, a psychology intern and an alcohol counselling psychology trainee with Edinburgh Lothian Council and with Drugs, Alcohol and Psychotherapies Limited in Kirkcaldy.

Correspondence Dr Jason Luty, Consultant Psychiatrist, Glenfields Hospital, Leicestershire Partnership NHS Trust, Groby Road, Leicester LE3 9QP, UK.
Email: jason.luty@yahoo.co.uk

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SUMMARY

Motivational interviewing is a form of psychotherapy in which ambivalence towards an aberrant behaviour is targeted. Rather than challenge the behaviour directly, the clinician encourages the patient to devise a list of problems that are caused by the behaviour and to identify solutions. There are many trials of motivational interviewing, although it has been most studied as treatment for substance misuse. The effect sizes for motivational interviewing are small, they probably diminish over time, the trials often use multiple outcome measures and the outcomes of some very large trials have been disappointing. Large effects are occasionally reported, although these tend to be from small trials conducted by highly motivated research groups and the results tend to diminish when the trials are repeated or enlarged. Nonetheless, motivational interviewing is a well-validated approach supporting and enabling engagement in therapeutic process. It could be argued that even though it might not be as efficacious as a primary/stand-alone means of changing patients' behaviour, it can still be highly effective when combined with other approaches or used as a conduit to a more intensive therapy.

LEARNING OBJECTIVES

- Gain a basic understanding of what motivational interviewing involves
- Develop an awareness of the many therapeutic applications of motivational interviewing
- Develop an awareness of the modest results of the very large field trials and the tendency for effect to diminish over time

DECLARATION OF INTEREST

None.

There is a significant body of research evidence to support motivational interviewing as effective both as a brief intervention and as a stand-alone course of psychotherapy. We use the term 'motivational interviewing' here to refer to any motivational intervention, including single-session brief interventions and more protracted courses of multiple sessions. More protracted courses of motivational techniques are often called 'motivational enhancement therapy', and they include the four manualised

1 h sessions in Project MATCH (which we discuss below).

Comparing the effectiveness of different forms of psychotherapy is fraught with problems. Effect sizes are often used, although these are prone to their own bias, including combinations of multiple outcome measures, which may produce a clinically significant benefit by chance. Conventionally, effect sizes are classified as small (0.2), medium (0.5) and large (0.8). The UK National Institute for Health and Care Excellence (NICE) has adopted an effect size of 0.50 as the threshold for clinical relevance (Ambresin 2014). Regrettably, many forms of psychotherapy fail to reach this threshold. Furthermore, many guidelines and manuals for psychotherapy emphasise non-specific therapist characteristics such as being positive, empathetic, optimistic, supportive and enthusiastic (Miller 1999). Other non-specific interventions include praising patients for attending counselling sessions. We attempt here to appraise the effectiveness of the unique characteristics of motivational interviewing.

What is motivational interviewing?

Motivational interviewing is a well-validated, person-centred therapeutic approach that targets ambivalence towards an aberrant behaviour (Miller 2002, 2013) (Box 1). It involves collaboration rather than confrontation (Box 2). Instead of challenging a behaviour (such as drug and alcohol use or excessive dieting) directly, the clinician encourages the patient to devise a list of problems that it causes. This is expected to create cognitive dissonance, demonstrating inconsistency in the self that necessitates change (Price-Evans 2011). It seems that making patients aware of the discrepancy between 'where they are and where they want to be' (Miller 2002) increases the importance of change and thus helps to build self-understanding.

Miller & Rollnick (2013) describe the 'spirit' underlying motivational interviewing as comprising collaboration, evocation, acceptance and compassion, with compassion serving as an active and prioritised promotion of the patient's welfare. The clinician 'rolls with resistance' – avoids argument and allows the patient to find their own solutions or ways of behaving, rather than telling them why a certain course of

BOX 1 Illustration of motivational interviewing

Miller & Rollnick (2013) describe motivational interviewing as a well-validated therapeutic approach and a 'conversation about change' consisting of four therapeutic processes involved in strengthening motivation for change:

- 1 engaging: both parties establish a helpful connection and a working relationship;
- 2 focusing: engaging leads to a focus on particular agenda: what the person came to talk about;
- 3 evoking: eliciting the patient's motivations for change; it occurs when there is a focus on a particular change – the person voices the arguments for change;
- 4 planning: encompasses both developing commitment to change and formulating a specific plan of action.

action is bad (Box 3). Knowles *et al* (2013) argue that the evidence base for the effectiveness of motivational interviewing is strongest in the substance misuse field (including smoking cessation).

Drinking behaviours, drug use and motivational interviewing

The effectiveness of all forms of treatment for substance misuse was presented in a meta-analysis of 78 US controlled studies (Prendergast 2002). This reports a weighted mean effect size of 0.30, which is estimated to represent a 'success rate' of 57% for the treatment group and 42% for the control group. These trials also included brief interventions based on the principles of motivational interviewing. Unfortunately, many of the studies relied on self-reports of drug use and criminal activities – behaviours that are prone to significant under-reporting.

Of the 29 studies (including 15 for substance misuse) discussed in one review (Cole *et al*, 2011), 18 favoured motivational interviewing. One meta-analysis reported effect sizes of 0.56 for drug addiction, 0.53 for excessive exercise and dieting, and 0.25–0.53 for alcohol problems. Another, which appraised motivational interviewing for alcohol

BOX 2 Questions that reflect the feeling of the process of motivational interviewing and promote change

- 'Why would you want to make this change?'
- 'How might you go about it in order to succeed?'
- 'What are the three best reasons for you to do it?'
- 'How important is it for you to make this change, and why?'
- 'So what do you think you'll do now?'

(Miller & Rollnick, 2013: p. 11)

BOX 3 Strategies for encouraging change

- Ask open-ended questions that are likely to encourage 'change talk'
- List pros and cons of changing and staying the same
- Ask about the positives and negatives of the target behaviour (e.g. drinking)
- Ask for examples after the patient introduces change talk, e.g. 'Tell me more', 'When did that last happen?'
- Ask about the period before the problem behaviour and ask whether were things better or different
- Ask how the patient would like their life to be in 5 years, and how they think their life would be different if they are successful in making the changes they want
- Consider extremes: what are the worst things that could happen if they do not make a change, and what are the best things that could happen if they do make this change?
- Ask 'On a scale of 1 to 10, how important is it to you to change?', 'Why are you at X and not at Y? What might happen that could move you from X to Y?'

(Miller & Rollnick, 2002)

problems, showed a mean effect size of 0.43 for motivational interviewing against another treatment and 0.18 for motivational interviewing against no treatment, although the studies typically had short follow-up periods of around 3 months. Paradoxically, comparing motivational interviewing with no treatment gave larger effects than when it was compared with another treatment.

Project MATCH

Project MATCH was a US\$27 million randomised trial involving over 1700 alcohol-dependent people in the USA comparing 12-session cognitive-behavioural therapy (CBT), 4-session motivational interviewing and 12-session 12-step facilitation (based on the model used by Alcoholics Anonymous). For all groups, the total number of abstinent days per month increased from 20% to over 80%, with 20–35% achieving complete abstinence at 1 year. However, the overall effect size between treatments was just less than 0.1 (Project Match Research Group 1998; Magill 2009). Project MATCH lacked a no-treatment control group. Consequently, it has yet to produce any clinically useful results other than to suggest that 4-session motivational interviewing was more cost-effective than the other treatment options.

UKATT

The United Kingdom Alcohol Treatment Trial (UKATT) involved 742 individuals with alcohol

problems (UKATT Research Team 2005). Participants were randomised to three sessions of motivational interviewing or eight sessions of social behaviour and network therapy (a technique designed to develop a supportive network of family and friends). At 12-month follow-up there were no clinically significant differences between outcomes, with both groups showing significant reductions in alcohol consumption. There was also no change in an objective biochemical measure (liver function). The proportion of days of abstinence increased from 29 to 46%. Overall average alcohol consumption halved, from approximately 133 units per day to 70 units per day for all groups, although average consumption remained around three times sensible drinking limits. UKATT had no control group and therefore assumed that motivational interviewing was effective. However, it was not possible to estimate the natural rate of recovery, which was likely to be high in this self-selecting research group, particularly as only 1 in 5 patients who attended the services took part in the study.

Brief interventions and SIPS

Brief interventions, of as little as 5 min, were devised for the large numbers of non-dependent 'hazardous and harmful drinkers' (Barbor 2001; McCambridge 2014). The Screening and Intervention Programme for Sensible Drinking (SIPS) trial (Kaner 2013) evaluated a more prolonged intervention (20 min) termed brief lifestyle counselling, which was based on a condensed form of motivational interviewing. The trial involved 756 drinkers from 34 primary care clinics. Participants were cluster randomised to a control group (who received an information leaflet), one brief alcohol intervention (5 min of structured advice), or one session of brief lifestyle counselling (20 min of motivational interviewing). Outcome was measured using the 10-item Alcohol Use Disorders Identification Test (AUDIT). In total, 84% of eligible participants took part and response rates at the two follow-up points were 83% and 79%. The SIPS trial showed no difference in outcome by intention-to-treat analysis. (Overall for all groups, 35–39% scored less than 8 on the AUDIT at 12 months, indicating that about 1 in 5 had moved out of the harmful or hazardous drinking category. AUDIT scores at 12 months ranged from 10.49 to 10.69: an improvement of about 15% in AUDIT scores or an effect size of about 0.2 compared with baseline.) There remains uncertainty as to whether the brief intervention, or the assessment process itself, can produce a modest change in drinking behaviour (Burke 2003; Vasilaki 2006; Lundahl *et al*, 2010).

Waning of effect

Unfortunately, the effects of brief motivational interviewing seem to diminish over time. A meta-analysis combining 72 different studies of the intervention for problems such as drinking, drug use and smoking demonstrated an overall effect size of 0.77 at 1-month follow-up, followed by a rapid decrease to 0.39 at 1 and 3 months, and a further reduction to 0.11 at 12 months or longer (Cole *et al* 2011). McCambridge & Strang (2005) report a cluster randomised trial of single-session motivational interviewing for alcohol, tobacco and illicit drug use in 200 young participants. The initial improvements were confined to alcohol consumption and were also lost by 12 months. Furthermore, in their studies on adolescents' illicit drug use, Li *et al* (2016) found no significant effect of motivational interviewing on drug use ($d = 0.05$, 95% CI 0.06–0.17, $P = 0.36$). Even though the intervention was unsuccessful in reducing illicit drug use, the researchers concluded that its inclusion in substance misuse treatments for adolescents could be beneficial in influencing intentions to change. This was reflected in the significant effect on attitude change ($d = 0.44$, 95% CI 0.20–0.67, $P = 0.0002$).

Overall effect sizes for motivational interviewing in substance misuse are small, they diminish over time, the trials use multiple outcome measures and the outcomes of some very large trials have been disappointing. However, several sources consider motivational interviewing to have strong research support for the treatment of mixed substance and alcohol misuse/dependence (APA Presidential Task Force on Evidence-Based Practice 2006; Chambless 2013; Society of Clinical Psychology 2016; and see, for example, <https://www.evidence.nhs.uk/search?q=motivational+interviewing> for other potential sources).

Smoking cessation and motivational interviewing

Smoking cigarettes is the leading cause of preventable disease in the world (Lai 2010). There is good evidence to support the efficacy of many different methods of smoking cessation (Stead *et al*, 2013), with motivational interviewing among the most popular. A 2010 Cochrane Review of 14 studies involving over 10 000 smokers from the general population reported modest benefit of motivational interviewing over brief advice or usual care (RR = 1.27, 95% CI 1.14–1.42) (Lai 2010). However, an updated Cochrane Review of 28 studies and involving over 16 000 participants found that motivational interviewing resulted in higher quit rates (a modest but significant increase: RR = 1.26; 95% CI 1.16–1.36) than usual care or brief advice (Lindson-

Hawley 2015). What is more, single-session interventions seemed to be more effective than multiple-session treatments in increasing the likelihood of quitting, although both approaches produced positive outcomes.

Moore et al (2002) report a cluster randomised controlled trial (RCT) of smoking cessation in 1527 pregnant women. This involved a series of five self-help booklets as part of a self-help programme designed to increase motivation to quit. Biochemically confirmed smoking cessation rates were low, with 19% in the intervention group and 21% in the treatment-as-usual group quitting. There was no significant difference in outcomes between groups.

Overall, the reported trials are methodologically rigorous, although they indicate a modest improvement in outcomes for smoking cessation.

Eating disorders and motivational interviewing

Treatments for eating disorders show high levels of drop-out (Price-Evans 2011; Schnicker 2013). One review of eight studies involving 601 participants compared various adaptations of motivational interviewing in eating disorders. All reports but one showed a beneficial effect of motivational interviewing at retaining patients in treatment, although the differences in outcomes were small (supplementary Table 1). The majority of trials compared motivational interviewing with other active treatments such as CBT. Two trials had a care-as-usual control group: Wade et al (2010) performed a trial of four motivational interviewing sessions with a novice therapist added to treatment as usual in 47 patients with anorexia nervosa. There was only a modest improvement in the motivational interviewing group. Cassin et al (2008) report a trial involving 128 patients with binge eating disorder which compared an 80-min motivational interviewing session to introduce a self-help handbook with simply giving participants the self-help handbook. There was a slight improvement in symptoms in the motivational interviewing group. Overall, the reported trials indicate a slight improvement in outcomes for eating disorders with motivational interviewing, although they rarely compared motivational interviewing with an inactive control group (Knowles 2013). In a recent study by Vella-Zarb et al (2015) on the helpfulness of motivational interviewing for the treatment of binge eating, researchers compared motivational interviewing with psychoeducation as prelude interventions to self-help. Motivational interviewing significantly increased participants' confidence in their ability to control binge eating and their readiness to change. Psychoeducation did not show similar results. No group differences

were identified when changes in eating behaviours and attitudes were examined.

Motivational interviewing for HIV prevention and treatment

Motivational interviewing has been adapted for HIV prevention and treatment (Knowles 2013). People who are HIV positive are usually given drug regimes that must be followed rigorously over several months, despite significant side-effects. Typically, there is only 50–70% adherence (Hill 2012). One review of five RCTs with sample sizes ranging from 141 to 326 HIV-positive individuals (Hill 2012) showed that motivational interviewing improved adherence in three of the trials; two reported a substantial decrease in viral load and one showed that CD4 cell count increased following motivational interviewing (supplementary Table 2). These data show an objective improvement in HIV treatment outcome following motivational interviewing.

Another study involved 188 men who have sex with men, randomised to a single session of motivational interviewing or a traditional outreach session. After the intervention, 49% participants from the motivational interviewing group accepted HIV testing and counselling, compared with 20% from the outreach session group; 98% from the motivational interviewing group returned for their test results, compared with 72% from the control group (Outlaw 2010). Parsons et al (2014) reported a trial of motivational interviewing to reduce high-risk sex and drug use among 143 HIV-negative men who have sex with men. Participants were randomised to four sessions of motivational interviewing or four sessions of content-matched education. At 1-year follow-up both groups reported substantial reduction in both drug use and unprotected anal intercourse. Participants from the motivational interviewing group were 24% less likely to engage in unprotected anal intercourse (OR = 0.76; $P \leq 0.0001$) and 18% less likely to misuse any substances than participants from the control group (OR = 0.82; $P \leq 0.0001$). Overall, the outcomes of motivational interviewing in reducing risk behaviours for men who have sex with men were good.

Motivational interviewing in diabetes

Change of behaviour and lifestyle are important strategies to minimise the development of non-insulin dependent (type 2) diabetes (Jansink 2009; Dellasega 2010). One study investigated the effect of training general practitioners (GPs) in motivational interviewing on patients' motivation for lifestyle changes, understanding of diabetes and beliefs about its prevention and treatment (Rubak 2011).

This RCT included 628 patients with type 2 diabetes and 140 GPs. The GPs were randomised to receive training in motivational interviewing or not. The intervention training consisted of a 1.5-day residential course, with a half-day follow-up twice during the first year. At 1 year there was no significant difference between patients randomised to the intervention and control groups in metabolic status, measured by HbA_{1c}, or medication adherence (which was close to 100%).

A study assessed the effectiveness of a primary care-based lifestyle intervention to reduce the risk of type 2 diabetes, risk of cardiovascular disease and motivation for change of behaviour (Lakerveld 2013). In total, 622 adults at risk of type 2 diabetes and/or cardiovascular disease were randomly assigned to a theory-based lifestyle intervention combining motivational interviewing and problem-solving treatment or to receipt of healthcare brochures. There were no significant differences between the two groups in risk of diabetes or cardiovascular disease or in secondary outcomes (diet, smoking, physical activity) at 6- or 12-month follow-up.

Overall, trials found little difference in outcome between the motivational interviewing and control groups in attempts to improve health behaviours in patients with diabetes.

Motivational interviewing in treatment of obesity and weight loss

Meta-analysis of 11 studies of motivational interviewing compared with control conditions found that weight loss in overweight or obese participants was significantly greater with motivational interviewing (weighted mean difference: -1.47 kg, 95% CI -2.05 to -0.88 ; effect size: -0.51 , 95% CI -1.04 to 0.01) (Armstrong 2011). For example, a 12-week RCT showed that pedometer walking plus motivational interviewing reduced body weight by an additional 2.21 kg in 64 overweight individuals with schizophrenia ($P = 0.03$; Methapatara 2011). Although motivational interviewing produced statistically significant improvements in weight loss for obese patients the clinical value of these (typically 2 kg) is debatable.

Other applications of motivational interviewing

A review of motivational interviewing with offenders showed that it can enhance motivation to change, leading to improved retention in treatment and reduced offending (McMurran 2009). The four most significant studies in the review are summarised in Table DS3.

A pilot RCT of a treatment programme for anxiety disorders in individuals with traumatic brain injury (Hsieh 2012) randomly assigned the 27 participants to one of three groups: motivational interviewing with CBT; non-directive counselling with CBT; and treatment as usual. Both intervention groups showed much greater anxiety reduction than the treatment-as-usual group, prompting the authors to suggest that motivational interviewing might be a useful 'prelude intervention'. Similar findings were reported by another RCT involving people with traumatic brain injury (Ponsford 2016), in which motivational interviewing used as a preparatory intervention before CBT resulted in a substantial reduction in anxiety (on the Hospital Anxiety and Depression Scale: 95% CI -2.07 to -0.06) and depression (on the Depression Anxiety and Stress Scale: 95% CI -5.61 to -0.12), and significant gains in psychosocial functioning (on the Sydney Psychosocial Reintegration Scale: 95% CI 0.04 to 3.69) compared with no treatment (a waiting-list control).

A study of 150 participants with gambling problems (Carlbring 2010) involved randomisation to either four sessions of motivational interviewing, eight sessions of group CBT or a no-treatment waiting-list. At 12-month follow-up there were no significant differences in outcomes between the active treatment groups, which both showed substantial improvements over the control group. A subsequent meta-analysis and systematic review of the efficacy of motivational interviewing in the treatment of disordered gambling (Yakovenko 2015) identified motivational interviewing as efficacious in the short term. The intervention was associated with substantial reduction in gambling frequency up to a year after its delivery. However, motivational interviewing showed similar results to non-motivational interventions in terms of money spent gambling. Furthermore, it remains unclear whether the effects of the intervention are maintained over the longer time.

Borrelli *et al* (2007) assessed the use of motivational interviewing to improve asthma medication adherence in 25 participants who were randomised to either one session of asthma education plus motivational interviewing or one session of asthma education alone. Motivation and medication adherence increased substantially in the motivational interviewing group compared with the asthma education group.

Conclusions

Overall effectiveness

Lundahl *et al* (2010) have reported that motivational interviewing appears to be more effective in trials with weak comparison groups, whereas it

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works less well when compared with other specific treatments. This opinion is based on their meta-analysis of 119 studies on such problems as substance misuse, gambling, health-related behaviours and engagement with treatment. Nevertheless, the reviewers noted some improvement in 75% of participants who received motivational interviewing, although it was generally within one standard deviation of the mean. An earlier meta-analysis reported moderate effect sizes (from 0.25 to 0.57) for motivational interviewing compared with no treatment and/or placebo for problems involving alcohol, drugs, and diet and exercise (Burke 2003). Paradoxically, the results did not support the efficacy of motivational interviewing for cigarette smoking or HIV-risk behaviours, although a 56% reduction in drinking was reported. Similarly, a review of 29 randomised trials of motivational interviewing for substance misuse, smoking, HIV risk or diet/exercise showed that 17 studies yielded at least one significant effect size for behaviour change, but no overall effect size was generated (Dunn 2001). The results of four other contrasting meta-analyses and reviews are summarised in Table DS4.

An early review of treatment for alcohol problems using motivational interviewing as a brief intervention estimated that it reduced alcohol consumption by around 24% compared with control conditions (Effective Health Care Team 1993). However, 20 trials comparing brief interventions with extended treatment showed no significant benefit of extended treatment. Unfortunately, one of the largest and most recent trials of brief motivational interviewing for alcohol problems, the SIPS trial, 'does not support the additional delivery of five minutes of brief advice or 20 minutes of brief lifestyle counselling over and above the delivery of feedback on screening plus a patient information leaflet' (Kaner 2013). Furthermore, there was no benefit for motivational interviewing over other active treatment in the large UKATT and MATCH trials of alcohol treatment.

A Cochrane review of 14 different studies involving over 10 000 smokers from the general population reported modest benefit of motivational interviewing over brief advice or usual care (RR = 1.27) (Lai 2010). However, a more recent review found that motivational interviewing resulted in significantly higher quit rates than usual care or brief advice (Lindson-Hawley 2015).

Research with substance users suggests that the effects of brief motivational interviewing diminish over time. A meta-analysis combining 72 different studies involving drinking, drug use and smoking estimate an overall effect size that fell to only 0.11 after 12 months (Cole 2011). Moreover, motivational interviewing has been found to be

unsuccessful in reducing illicit drug use in adolescents, although Li *et al* (2016) concluded that its inclusion in substance misuse treatment programmes for adolescents could present as beneficial for influencing intentions to change.

The reported trials indicate a slight improvement in outcomes for eating disorders with motivational interviewing, although they rarely compared motivational interviewing with an inactive control group. Trials showed an objective improvement in HIV treatment outcome (increased CD4 count) following motivational interviewing and improvement in presentation for HIV testing, reduced high-risk behaviours and treatment adherence in men who have sex with men. However, there was little difference in outcome between the motivational interviewing and control groups in attempts to improve health behaviours in people with diabetes. Although motivational interviewing produced statistically significant improvements in weight loss for obese participants, the clinical value of these (typically 2 kg) is debatable.

The verdict

The effect sizes for motivational interviewing are small, they probably diminish over time and the outcomes of some very large trials have been disappointing. Large effects are occasionally reported, but they tend to be from small trials based within highly motivated research groups and they tend to diminish when the trials are repeated or enlarged. Nevertheless, it seems that it is worth considering integrating motivational interviewing into the treatment of patients who are less likely to engage in or respond to unmodified interventions. Indeed, motivational interviewing has already been used in conjunction with other treatments (such as CBT, medication and interpersonal therapy) to improve treatment engagement or adherence in individuals with depression and co-occurring substance misuse (Parikh 2016). Motivational interviewing could still be used to encourage engagement with other forms of therapy such as medication, cognitive behavioural therapy or 12-step approaches.

Supplementary material

To view supplementary material for this article, please visit <https://doi.org/10.1192/bja.2017.7>

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MCOs

Select the single best option for each question stem

1 Which of the following statements about motivational interviewing is false:

- a it targets ambivalence towards an aberrant behaviour
- b it relies on confrontation
- c the clinician 'rolls with resistance'
- d the evidence base is strongest in the substance misuse field, especially smoking cessation
- e it was developed and is manualised by Miller & Rollnick

2 Which of the following statements about alcohol treatment trials is false:

- a Project MATCH involved 1700 alcohol-dependent people
- b overall effect size between treatments has been estimated at just less than 0.1 in Project MATCH
- c the UKATT trial involved psychodynamic psychotherapy
- d the small differences in outcome in the SIPS trial may have been due to administration of the assessment instrument
- e the effects of brief motivational interviewing appear to diminish over time

3 Which of the following statements is true:

- a Cochrane Reviews have persistently failed to show any benefit of motivational interviewing in smoking cessation
- b motivational interviewing has not been used in trials to treat eating disorders
- c motivational interviewing has been shown to be effective in HIV prevention using objective outcomes
- d motivational interviewing is clearly effective at producing relevant behaviour change in type 2 diabetes
- e GPs cannot be trained to give brief motivational interviewing sessions

4 Which of the following statements is false:

- a motivational interviewing can produce a modest (2 kg) weight loss in people with schizophrenia
- b motivational interviewing can be used as a prelude intervention to engage patients in cognitive behaviour therapy
- c a meta-analysis shows that motivational interviewing may be effective in pathological gambling
- d rates of repeated alcohol related injuries may be reduced by motivational interviewing in emergency departments
- e motivational interviewing should not be combined with in cognitive behaviour therapy