

# Systematic and Meta-Analyses of Research on Motivational Interviewing

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Most meta-analyses yield mixed findings with average effect sizes in the small to medium range. As with clinical trials, some reviews find no effect at all; and of course later meta-analyses have the benefit of a larger number of trials to review. Summaries are quoted directly from article abstracts or conclusions. A substantial challenge is that many trials have included little or no documentation of treatment fidelity, and interventions evaluated in clinical trials can vary widely in content and quality. For a discussion of these methodological issues see Miller, W. R., & Rollnick, S. (2014). The effectiveness and ineffectiveness of complex behavioral interventions: Impact of treatment fidelity. *Contemporary Clinical Trials*, 37(2), 234-241. Additions to the bibliography are welcome: Send to [WRMILLER@UNM.EDU](mailto:WRMILLER@UNM.EDU), preferably as an article attachment.

	<b>N Health Care - General</b>	
Bischof, G., Bischof, A., & Rumpf, H.-J. (2021). Motivational Interviewing: An Evidence-Based Approach for Use in Medical Practice. <i>Deutsches Arzteblatt International</i> , 118(7), 109-115.		Meta-analyses reveal statistically significant mean intervention effects of MI in medical care with respect to a variety of health-relevant modes of behavior, in comparison to standard treatment and no treatment in the control groups (odds ratio [OR]: 1.55; 95% confidence interval: [1.40; 1.71]). Statistically significant effect sizes were reported for substance consumption, physical activity, dental hygiene, body weight, treatment adherence, willingness to change behavior, and mortality; effects on health-promoting behavior were mixed.
Burke, B. L., Arkowitz, H., & Menchola, M. (2003). The efficacy of motivational interviewing: A meta-analysis of controlled clinical trials. <i>Journal of Consulting and Clinical Psychology</i> , 71(5), 843-861.	30	A meta-analysis was conducted on controlled clinical trials investigating adaptations of motivational interviewing (AMIs), a promising approach to treating problem behaviors. AMIs were equivalent to other active treatments and yielded moderate effects (from .25 to .57) compared with no treatment and/or placebo for problems involving alcohol, drugs, and diet and exercise. Results did not support the efficacy of AMIs for smoking or HIV-risk behaviors. AMIs showed clinical impact, with 51% improvement rates, a 56% reduction in client drinking, and moderate effect sizes on social impact measures ( $d=0.47$ ). Potential moderators (comparative dose, AMI format, and problem area) were identified using both homogeneity analyses and exploratory multiple regression. Results are compared with other review results and suggestions for future research are offered.
Burke, B. L., Dunn, C. W., Atkins, D. C., & Phelps, J. S. (2004). The emerging evidence base for motivational interviewing: A meta-analytic and qualitative inquiry. <i>Journal of Cognitive Psychotherapy: An International Quarterly</i> , 18(4), 309-322.	38	This article offers a meta-analytic, qualitative, and process review of the empirical literature for adaptations of motivational interviewing (AMIs), a promising approach to treating problem behaviors. AMIs are equivalent to other active treatments and yield moderate effects (from 0.35 to 0.56) compared to no-treatment/placebo for problems involving alcohol, drugs, and diet and exercise. Results do not support the efficacy of AMIs for smoking or HIV-risk behaviors. Conclusions regarding the mechanisms of action for AMIs are limited by methodological problems: confounding motivational interviewing with feedback, unclear definitions of the AMI interventions used, difficulties in therapist training, and limited use of treatment integrity rating scales. Extant research suggests that AMIs are equivalent in efficacy to and briefer than cognitive behavioral skills training (CBST) approaches. Since AMIs focus on readiness to change while CBST targets the change process, AMIs may be useful as preludes or additions to CBST.

Cummings, S. M., Cooper, R. L., & Cassie, K. M. (2008). Motivational interviewing to affect behavioral change in older adults. <i>Research on Social Work Practice, 19</i> (2), 195-204.	15	A comprehensive literature review was conducted of intervention studies that tested the use of MI to achieve behavioral change among older adults with acute and chronic illnesses. Although limited in number, the studies revealed a significant improvement in physical activity, diet, cholesterol, blood pressure and glycemic control, and increased smoking cessation following MI. MI and its derivatives can be useful in dealing with a range of health issues faced by older adults. Further research to extend findings and address methodological issues is recommended. The integration of MI into social work courses focused on practice with older adults should be considered.
Erna, M., & Tintin, S. (2019). Motivational interviewing as a problem solving intervention to improve adherence: Review of the related literature. <i>Indian Journal of Public Health Research &amp; Development, 10</i> (8), 2580-2584.		MI studies show that MI-based interventions are effective in promoting health behavior changes. It is also associated with positive health outcomes such as low blood pressure, diet, decreased smoking, lower cholesterol, and better blood sugar control.
Frost, H., Campbell, P., Maxwell, M., O'Carroll, R., Dombrowski, S., Cheyne, H., . . . Pollock, A. (2016). Effectiveness of motivational interviewing on adult behaviour change in health and social care settings: An overview of reviews. <i>Physiotherapy, 102</i> (Supplement 1), e59-60.	66*	We found moderate quality evidence of small beneficial effects of motivational interviewing for changing health behavior relating to dependency (alcohol, substance abuse and smoking) and promotion of physical activity participation.  *66 reviews
Frost, H., Campbell, P., Maxwell, M., O'Carroll, R. E., Dombrowski, S. U., Williams, B., . . . Pollock, A. (2018). Effectiveness of motivational interviewing on adult behaviour change in health and social care settings: A systematic review of reviews. <i>Plos One, 13</i> (10), e020489.	104*	We have created a comprehensive map of reviews relating to Motivational Interviewing to signpost stakeholders to the best available evidence. More high quality research is needed to be confident about the effectiveness of Motivational Interviewing. We identified a large volume of low quality evidence and many areas of overlapping research. To avoid research waste, it is vital for researchers to be aware of existing research, and the implications arising from that research. In the case of Motivational Interviewing issues relating to monitoring and reporting fidelity of interventions need to be addressed *104 reviews
Hettema, J., Steele, J., & Miller, W. R. (2005). Motivational interviewing. <i>Annual Review of Clinical Psychology, 1</i> , 91-111.	72	The rapidly growing evidence base for MI is summarized in a new meta-analysis of 72 clinical trials spanning a range of target problems. The average short-term between-group effect size of MI was 0.77, decreasing to 0.30 at follow-ups to one year. Observed effect sizes of MI were larger with ethnic minority populations, and when the practice of MI was not manual-guided. The highly variable effectiveness of MI across providers, populations, target problems, and settings suggests a need to understand and specify how MI exerts its effects.
Knight, K. M., McGowan, L., Dickens, C., & Bundy, C. (2006). A systematic review of motivational interviewing in physical health care settings. <i>British Journal of Health Psychology, 11</i> (Pt 2), 319-332.	8	Eight studies were identified in the fields of diabetes, asthma, hypertension, hyperlipidaemia, and heart disease. The majority of studies found positive results for effects of MI on psychological, physiological, and life-style change outcomes. Problems with research in this area include: small sample sizes, lack of power, use of disparate multiple outcomes, inadequate validation of questionnaires, poorly-defined therapy and training. CONCLUSIONS: While MI has high face validity across a number of domains in physical health care settings, the general quality of trials in this area is inadequate and therefore

		recommendations for its dissemination in this area cannot yet be made. More research into MI applied to health behaviour change is urgently required.
Lundahl, B. W., Kunz, C., Brownell, C., Tollefson, D., & Burke, B. L. (2010). A meta-analysis of motivational interviewing: Twenty-five years of empirical studies. <i>Research on Social Work Practice</i> , 20(2), 137-160.	119	Judged against weak comparison groups, MI produced statistically significant, durable results in the small effect range (average $g = 0.28$ ). Judged against specific treatments, MI produced nonsignificant results (average $g = 0.09$ ). MI was robust across many moderators, although feedback (Motivational Enhancement Therapy [MET]), delivery time, manualization, delivery mode (group vs. individual), and ethnicity moderated outcomes. Conclusions: MI contributes to counseling efforts, and results are influenced by participant and delivery factors.
Lundahl, B., Moleni, T., Burke, B. L., Butters, R., Tollefson, D., Butler, C., & Rollnick, S. (2013). Motivational interviewing in medical care settings: a systematic review and meta-analysis of randomized controlled trials. <i>Patient Education and Counseling</i> , 93(2), 157-168.	48	Forty-eight studies (9618 participants) were included. The overall effect showed a statistically significant, modest advantage for MI: Odd ratio=1.55 (CI: 1.40-1.71), $z=8.67$ , $p<.001$ . MI showed particular promise in areas such as HIV viral load, dental outcomes, death rate, body weight, alcohol and tobacco use, sedentary behavior, self-monitoring, confidence in change, and approach to treatment. MI was not particularly effective with eating disorder or self-care behaviors or some medical outcomes such as heart rate. MI was robust across moderators such as delivery location and patient characteristics, and appears efficacious when delivered in brief consultations. PRACTICE IMPLICATIONS: The emerging evidence for MI in medical care settings suggests it provides a moderate advantage over comparison interventions and could be used for a wide range of behavioral issues in health care.
Martins, R. K., & McNeil, D. W. (2009). Review of motivational interviewing in promoting health behaviors. <i>Clinical Psychology Review</i> , 29(4), 283-293.	37	Overall, 37 articles were reviewed: 24 in the areas of diet and exercise, 9 in the area of diabetes, and 4 in the oral health area. Research in these areas suggests that (MI) is effective in all these health domains, although additional research is needed, particularly in the oral health arena. Specifically, future research in the areas of diet and exercise should examine the clinical utility of MI by health care professionals (other than dietitians), studies in the area of diabetes should continue to examine long-term effects of MI on glycemic control, and research in the area of oral health should focus on developing additional trials in this field. Further, future studies should demonstrate improved research methodology, and investigate the effects of possible outcome mediators, such as client change talk, on behavior change.
McKenzie, K. J., Pierce, D., & Gunn, J. M. (2015). A systematic review of motivational interviewing in healthcare: The potential of motivational interviewing to address the lifestyle factors relevant to multimorbidity. <i>Journal of Comorbidity</i> , 5(1), 162-174.	12*	A systematic review was conducted to assess the effectiveness of MI in healthcare settings and to consider its relevance for multimorbidity. Twelve meta-analyses pertinent to multimorbidity lifestyle factors were identified. As an intervention, MI has been found to have a small-to-medium statistically significant effect across a wide variety of single diseases and for a range of behavioural outcomes. This review highlights the need for specific research into the application of MI to determine if the benefits of MI seen with single diseases are also present in the context of multimorbidity.  *12 systematic reviews and meta-analyses
Miller, W. R., & Wilbourne, P. L. (2002). Mesa Grande: A methodological analysis of clinical trials of treatment for alcohol use disorders. <i>Addiction</i> , 97(3), 265-277.	17	As in our prior reviews, brief interventions again head the list of evidence-based treatment methods, even with brief motivational enhancement approaches removed to a separate category. The high CES values for these two categories reflect a relatively large number of studies with a high percentage of positive findings. Beyond the large volume of studies conducted, CES is further enhanced by the fact that brief interventions are often compared with a true no-treatment control, or as an add-on to standard care—designs that make it

		possible to assign an OLS of +2. Further, within our coding system, an OLS of +1 is assigned if a brief intervention yields outcomes similar to those for a more intensive or extensive treatment. Because brief interventions are often tested with people who were not seeking treatment for alcohol problems (e.g. identified in health-care settings as at-risk drinkers), this CES declines when only studies with treatment seeking populations are considered.
Miller, W. R., Wilbourne, P. L., & Hettema, J. (2003). What works? A summary of alcohol treatment outcome research. In R. K. Hester & W. R. Miller (Eds.), <i>Handbook of alcoholism treatment approaches: Effective alternatives</i> (3rd ed., pp. 13-63). Boston, Massachusetts: Allyn & Bacon.	74	Table 2.5 summarizes 74 controlled trials for four different types of brief intervention, three of which [including motivational enhancement] rank among the five most strongly supported methods [for treating alcohol problems] in Table 2.3.
Morton, K., Beauchamp, M., Prothero, A., Joyce, L., Saunders, L., Spencer-Bowdage, S., . . . Pedlar, C. (2015). The effectiveness of motivational interviewing for health behaviour change in primary care settings: A systematic review. <i>Health Psychology Review</i> , 9(2), 205-223.	33	Motivational interviewing (MI) is a patient-centred approach to behaviour change that was originally developed in the addiction field but has increasingly been applied to public health settings with a focus on health promotion. The purpose of this review was to examine the evidence base for MI interventions in primary care settings with non-clinical populations to achieve <i>behaviour change</i> for physical activity, dietary behaviours and/or alcohol intake. We also sought to explore the specific behaviour change techniques included in MI interventions within primary care. Electronic databases were searched for relevant articles and 33 papers met inclusion criteria and were included. Approximately 50% of the included studies ( $n = 18$ ) demonstrated positive effects in relation to health <i>behaviour change</i> . The efficacy of MI approaches is unclear given the inconsistency of MI descriptions and intervention components. Furthermore, research designs that do not isolate the effects of MI make it difficult to determine the effectiveness of such approaches. We offer a number of recommendations for researchers and practitioners seeking to include MI within behaviour change interventions to help improve the quality of the research and the effectiveness of MI-based interventions within primary care settings.
Olson, M. K. (2015). <i>Motivational interviewing in primary care and general health care settings: A meta-analysis</i> . Master of Arts Masters Thesis, University of Wisconsin-Milwaukee, Milwaukee. Retrieved from <a href="http://dc.uwm.edu/etd/827">http://dc.uwm.edu/etd/827</a> .	33	33 randomized controlled trials were located isolating the effect of motivational interviewing in general health care settings. The average effect ( $d = .153$ , $k = 33$ , $N = 32,588$ ) constitutes a small effect in favor of MI and/or MET, with no substantial benefit in offering MET ( $d = .125$ , (95% CI [0.044, 0.206], $N = 21,226$ ) as opposed to MI ( $d = .114$ , (95% CI [0.06, 0.016], $N = 8689$ ). MI and/or MET produces a small benefit within primary care and is relatively comparable to other brief interventions within the same setting. Primary care providers wishing to implement MI/MET within their practice may be reasonably assured that MI/MET will be more effective in improving patient outcomes than delivering no intervention.
Purath, J., Keck, A., & Fitzgerald, C. E. (2014). Motivational interviewing for older adults in primary care: A systematic review. <i>Geriatric Nursing</i> , 35(3), 219-224.	42	Chronic disease is now the leading cause of death and disability in United States. Many chronic illnesses experienced by older adults can be prevented or managed through behavior change, making patient counseling an essential component of disease prevention and management. Motivational Interviewing (MI), a type of conversational method, has been effective in eliciting health behavior changes in people in a variety of settings and may also be a useful tool to help older adults change. This review of the literature analyzes current research and describes potential biases of MI interventions that have been conducted in primary care settings with older adults. MI shows promise as a technique to elicit health

		behavior change among older adults. However, further study with this population is needed to evaluate efficacy of MI interventions in primary care settings.
Rubak, S., Sandbaek, A., Lauritzen, T., & Christensen, B. (2005). Motivational interviewing: a systematic review and meta-analysis. <i>British Journal of General Practice</i> , 55(513), 305-312.	72	Meta-analysis showed a significant effect (95% confidence interval) for motivational interviewing for combined effect estimates for body mass index, total blood cholesterol, systolic blood pressure, blood alcohol concentration and standard ethanol content, while combined effect estimates for cigarettes per day and for HbA(1c) were not significant. Motivational interviewing had a significant and clinically relevant effect in approximately three out of four studies, with an equal effect on physiological (72%) and psychological (75%) diseases. Psychologists and physicians obtained an effect in approximately 80% of the studies, while other healthcare providers obtained an effect in 46% of the studies. When using motivational interviewing in brief encounters of 15 minutes, 64% of the studies showed an effect. More than one encounter with the patient ensures the effectiveness of motivational interviewing. Motivational interviewing in a scientific setting outperforms traditional advice giving in the treatment of a broad range of behavioural problems and diseases. Large-scale studies are now needed to prove that motivational interviewing can be implemented into daily clinical work in primary and secondary health care.
Schaefer, M. R., & Kavookjian, J. (2017). The impact of motivational interviewing on adherence and symptom severity in adolescents and young adults with chronic illness: A systematic review. <i>Patient Education and Counseling</i> , 100(12), 2190-2199.	12	Twelve articles were retained for data extraction. Diabetes, asthma, and HIV were the most common chronic illness populations examined in the study. Eleven of the twelve articles provided support for either improved adherence, symptom reduction, or a combination of both after participants received MI. Quality of life was also enhanced in three studies.
Shingleton, R. M., & Palfai, T. P. (2016). Technology-delivered adaptations of motivational interviewing for health-related behaviors: A systematic review of the current research. <i>Patient Education and Counseling</i> , 99(1), 17-35.	41	We reviewed studies that reported using motivational interviewing (MI) based components delivered via technology and conducted ratings on technology description, comprehensiveness of MI, and study methods. The majority of studies were fully-automated and included at least one form of media rich technology to deliver the TAMI. Few studies provided complete descriptions of how MI components were delivered via technology. Of the studies that isolated the TAMI effects, positive changes were reported. Researchers have used a range of technologies to deliver TAMIs suggesting feasibility of these methods. However, there are limited data regarding their efficacy, and strategies to deliver relational components remain a challenge. Future research should better characterize the components of TAMIs, empirically test the efficacy of TAMIs with randomized controlled trials, and incorporate fidelity measures. Practice implications: TAMIs are feasible to implement and well accepted. These approaches offer considerable potential to reduce costs, minimize therapist and training burden, and expand the range of clients that may benefit from adaptations of MI.
VanBuskirk, K. A., & Wetherell, J. L. (2014). Motivational interviewing with primary care populations: A systematic review and meta-analysis. <i>Journal of Behavioral Medicine</i> , 37(4), 768-780.	12	Mean effect sizes ranged from .07 to .47; significant effect sizes were found for the adherence subgroup of studies ( $p = .04$ ) and all outcomes combined ( $p = .02$ ). Professional credentials of intervention deliverer were found to significantly moderate the association between MI and effect size in substance use subgroup ( $p = .0005$ ) and all outcomes combined ( $p = .004$ ). Mean

		effect sizes were largest in outcomes related to weight loss, blood pressure, and substance use. MI appears to be useful in clinical settings and as few as 1 MI session may be effective in enhancing readiness to change and action directed towards reaching health behavior-change goals.
van der Windt, M., van Zundert, S. K. M., Schoenmakers, S., Jansen, P. W., van Rossem, L., & Steegers-Theunissen, R. P. M. (2021). Effective psychological therapies to improve lifestyle behaviors in (pre)pregnant women: A systematic review. <i>Preventive Medicine Reports</i> , 24, 101631.	21	The findings revealed that MI was effective in reducing (self-reported) smoking and alcohol consumption and restricting <a href="#">gestational weight gain</a> (GWG).
<b>Alcohol / Substance Use Disorders</b>		
Appiah-Brempong, E., Okyere, P., Owusu-Addo, E., & Cross, R. (2014). Motivational interviewing interventions and alcohol abuse among college students: A systematic review. <i>American Journal of Health Promotion</i> , 29(1), e32-e42.	13	MI interventions were found to be effective in reducing alcohol consumption among college students, when compared to alternative interventions or no intervention. Potential moderators of MI intervention effects were identified to include practitioner's adherence to MI techniques and individual's drinking motives. MI presents itself as a promising tool that can augment the many existing social-environmental strategies of health promotion.
Barnett, E., Sussman, S., Smith, C., Rohrbach, L. A., & Spruijt-Metz, D. (2012). Motivational Interviewing for adolescent substance use: A review of the literature. <i>Addictive Behaviors</i> , 37(12), 1325-1334.	39	Motivational Interviewing (MI) is a widely-used approach for addressing adolescent substance use. Recent meta-analytic findings show small but consistent effect sizes. However, differences in intervention format and intervention design, as well as possible mediators of change, have never been reviewed. This review of the literature summarizes the most up-to-date MI interventions with adolescents, looks at differences between intervention format and design, and discusses possible theory-based mechanisms of change. Of the 39 studies included in this review, 67% reported statistically significant improved substance use outcomes. Chi square results show no significant difference between interventions using feedback or not, or interventions combined with other treatment versus MI alone. The need for systematic investigation in theory-based mechanisms of change is presented.
Bertholet, N., Daeppen, J. B., Wietlisbach, V., Fleming, M., & Burnand, B. (2005). Reduction of alcohol consumption by brief alcohol intervention in primary care: systematic review and meta-analysis. <i>Archives of Internal Medicine</i> , 165(9), 986-995.	19	We assessed the validity of the studies and performed a meta-analysis of studies reporting alcohol consumption at 6 or 12 months of follow-up. RESULTS: We examined 19 trials that included 5639 individuals. Seventeen trials reported a measure of alcohol consumption, of which 8 reported a significant effect of intervention. The adjusted intention-to-treat analysis showed a mean pooled difference of -38 g of ethanol (approximately 4 drinks) per week (95% confidence interval, -51 to -24 g/wk) in favor of the brief alcohol intervention group. Evidence of other outcome measures was inconclusive. Focusing on patients in primary care, our systematic review and meta-analysis indicated that brief alcohol intervention is effective in reducing alcohol consumption at 6 and 12 months.

Bien, T. H., Miller, W. R., & Tonigan, J. S. (1993). Brief interventions for alcohol problems: A review. <i>Addiction</i> , 88, 315-336.	32	To date, the literature includes at least a dozen randomized trials of brief referral or retention procedures, and 32 controlled studies of brief interventions targeting drinking behavior, enrolling over 6000 problem drinkers in both health care and treatment settings across 14 nations. These studies indicate that brief interventions are more effective than no counseling, and often as effective as more extensive treatment. The outcome literature is reviewed, and common motivational elements of effective brief interventions are described. There is encouraging evidence that the course of harmful alcohol use can be effectively altered by well-designed intervention strategies which are feasible within relatively brief-contact contexts such as primary health care settings and employee assistance programs. Implications for future research and practice are considered.
Branscum, P., & Sharma, M. (2010). A systematic review of motivational interviewing-based interventions targeting problematic drinking among college students. <i>Alcoholism Treatment Quarterly</i> , 28(1), 63-77.	11	Based on this review it appears that MI interventions are consistently effective at reducing alcohol use and drinking problems among college students and high-risk subgroups.
Buckner, J. D., Walukevich-Dienst, K., Crapanzano, K. A., Tucker, R. P., & Tynes, L. L. (2021 in press). Brief motivational interviewing-based interventions for opioid misuse in hospital settings. <i>Translational Issues in Psychological Science</i> . <a href="https://doi.org/10.1037/tps0000280">https://doi.org/10.1037/tps0000280</a>		The results indicate that there is not yet compelling evidence that brief interventions that include motivation-based interventions work in the absence of concurrent pharmacotherapy and/or referrals to local postdischarge treatment providers. The results also indicate that the utility of these interventions may vary as a function of hospital setting (e.g., emergency department, internal medicine clinic) and the severity of opioid misuse. Future directions for research in this area are proposed.
Calomarde-Gómez, C., Jiménez-Fernández, B., Balcells-Oliveró, M., Gual, A., & López-Pelayo, H. (2021). Motivational interviewing for cannabis use disorders: A systematic review and meta-analysis. <i>European Addiction Research</i> 27(6), 413-427.	40	MI showed efficacy in achieving abstinence in both adults (odds ratio [OR] = 3.84, 95% confidence interval [CI] 2.40–6.16, $p < 0.0001$ ) and adolescents (OR = 2.02, 95% CI 1.42–2.89, $p < 0.0001$ ). MI showed efficacy in reducing frequency and quantity of use in adults but not in adolescents. Those adults who were in the MI group consumed less joints per day than those in the control group (mean difference = $-0.69$ joints per day, 95% CI $-0.84$ to $-0.53$ , $p < 0.001$ ), and they consumed on less days per month (mean difference = $-3.9$ days per month, 95% CI $-7.47$ to $-0.34$ , $p = 0.0317$ ) than those in the control group.
Darker, C. D., Sweeney, B. P., Barry, J. M., Farrell, M. F., & Donnelly-Swift, E. (2015). Psychosocial interventions for benzodiazepine harmful use, abuse or dependence. <i>Cochrane Database of Systematic Reviews</i> (5), CD009652.	4	Based on the very low quality of evidence available, the effect of MI versus TAU for all the time intervals is unclear; post treatment (RR 4.43, 95% CI 0.16 to 125.35; two trials, 34 participants), at three month follow-up (RR 3.46, 95% CI 0.53 to 22.45; four trials, 80 participants), six month follow-up (RR 0.14, 95% CI 0.01 to 1.89) and 12 month follow-up (RR 1.25, 95% CI 0.63 to 2.47). There was very low quality of evidence to determine the effect of MI on reducing BZDs by $> 50\%$ at three month follow-up (RR 1.52, 95% CI 0.60 to 3.83) and 12 month follow-up (RR 0.87, 95% CI 0.52 to 1.47). The effects on drop-outs from treatment at any of the time intervals between the two groups were uncertain due to the wide CIs; post-treatment (RR 0.50, 95% CI 0.04 to 7.10), three month follow-up (RR 0.46, 95% CI 0.06 to 3.28), six



		month follow-up (RR 8.75, 95% CI 0.61 to 124.53) and 12 month follow-up (RR 0.42, 95% CI 0.02 to 7.71).
DiClemente, C. C., Corno, C. M., Graydon, M. M., Wiprovnick, A. E., & Knoblach, D. J. (2017). Motivational interviewing, enhancement, and brief interventions over the last decade: A review of reviews of efficacy and effectiveness. <i>Psychology of Addictive Behaviors</i> , 31(8), 862-887.	34	Motivation is a well-established predictor of recovery for addictive behaviors. Treatments aimed at changing substance use and gambling frequently employ motivational enhancing strategies, based in the principles of Motivational Interviewing (MI). Evidence for these approaches across addictive behaviors does not always paint a clear picture. The purpose of this review was to examine existing reviews of motivational-based interventions for various substances of abuse and gambling in the last decade to gain a deeper understanding of the current evidence and implications for future research and clinical practice. Literature searches were conducted to identify review articles from January 1, 2007 to January 30, 2017 for motivational enhancing interventions for alcohol, tobacco, drugs, marijuana, cocaine, opioids, methamphetamines, and gambling. Of the 144 articles assessed we included a total of 34 review articles in our review, including 6 Cochrane reviews. This review supports use of motivationally enhancing interventions across addictive behaviors with strongest evidence supporting use in alcohol and tobacco, with brief interventions showing strong efficacy. There is strong support for MI with marijuana and some support for gambling. Insufficient evidence is available for methamphetamine or opiate use. There are important caveats. In most cases, MI is more effective than no treatment and as effective (but not necessarily more effective) than other active treatments. Findings for effectiveness of more intensive motivational interventions or combinations are mixed. Treatment fidelity assessments, limited subpopulation analyses, and differences in dose, outcomes, and protocol specification continue to pose significant problems for reviews.
Foxcroft, D. R., Coombes, L., Wood, S., Allen, D., Almeida Santimano, N. M. L., & Moreira, M. T. (2016). Motivational interviewing for the prevention of alcohol misuse in young adults. <i>Cochrane Database of Systematic Reviews</i> (7).  <i>For a critique of this ongoing review see:</i> Mun, E.-Y., Atkins, D. C., & Walters, S. T. (2015). Is motivational interviewing effective at reducing alcohol misuse in young adults? A critical review of Foxcroft et al. (2014). <i>Psychology of Addictive Behaviors</i> , 29(4), 836-846.	77	At four or more months follow-up, we found only small or borderline effects showing that MI reduced the quantity of alcohol consumed, frequency of alcohol consumption, alcohol problems and peak blood alcohol concentration (BAC). We didn't find any effects for binge drinking, average BAC, drink-driving or other alcohol-related risky behaviour. We found no relationship between the length of MI and its effectiveness. Also, there were no clear subgroup differences in effects when we examined the type of comparison group (assessment only control or alternative intervention, the setting (college/university vs other settings), or risk status (higher risk students vs all/low-risk students). None of the studies reported harms related to MI. Although we found some significant effects for MI, our reading of these results is that the strength of the effects was slight and therefore unlikely to confer any advantage in practice. Overall, there is only low or moderate quality evidence for the effects found in this review. Many of the studies did not adequately describe how young people were allocated to the study groups or how they concealed the group allocation to participants and personnel. Study drop-outs were also an issue in many studies. These problems with study quality could result in inflated estimates of MI effects, so we cannot rule out the possibility that any slight effects observed in this review are overstated. <i>This review was withdrawn from the Cochrane Database</i>
Gates, P. J., Sabioni, P., Copeland, J., Le Foll, B., & Gowing, L. (2016). Psychosocial interventions for	23	The most consistent evidence supports the use of cognitive-behavioural therapy (CBT), motivational enhancement therapy (MET) and particularly their combination for assisting with



cannabis use disorder. <i>Cochrane Database of Systematic Reviews</i> (5).		reduction of cannabis use frequency at early follow-up (MET: MD 4.45, 95% CI 1.90 to 7.00, four studies, 612 participants; CBT: MD 10.94, 95% CI 7.44 to 14.44, one study, 134 participants; MET + CBT: MD 7.38, 95% CI 3.18 to 11.57, three studies, 398 participants) and severity of dependence (MET: SMD 4.07, 95% CI 1.97 to 6.17, two studies, 316 participants; MET + CBT: SMD 7.89, 95% CI 0.93 to 14.85, three studies, 573 participants), although no particular intervention was consistently effective at nine-month follow-up or later.
Grenard, J. L., Ames, S. L., Pentz, M. A., & Sussman, S. (2006). Motivational interviewing with adolescents and young adults for drug-related problems. <i>International Journal of Adolescent Medicine and Health</i> , 18(1), 53-67.	17	A review of 17 clinical studies revealed mixed findings for the efficacy of brief MI among these populations. However, in 29% of the studies (5 of 17), there was a clear advantage of the brief MI demonstrated compared to standard care or other programming. Components common to successful brief MI interventions included one-on-one sessions and feedback on substance use compared to norms. Interviewer empathy has been shown to be a key component in studies with adults, but this was not measured in a standardized manner across the current studies. The studies reviewed here indicate that brief MI might be effective among these populations, but the key components necessary for successful MI interventions have not been fully identified.
Halladay, J., Scherer, J., MacKillop, J., Woock, R., Petker, T., Linton, V., & Munn, C. (2019). Brief interventions for cannabis use in emerging adults: A systematic review, meta-analysis, and evidence map. <i>Drug and Alcohol Dependence</i> , 204(107565).	26	Most interventions were motivational, single sessions, and delivered in person. Pooling results at 1-3 months post-intervention, BIs compared to passive control slightly reduced symptoms of cannabis use disorder (SMD -0.14 [95% CI -0.26 to -0.01]) and increased the odds of abstinence (OR 1.73 [95% CI 1.13 to 2.66]). This review indicates that BIs targeting non-treatment seeking emerging adults result in significantly reduced risk for cannabis use disorder and increased likelihood of cannabis abstinence, however evidence is of low quality.
Havard, A., Shakeshaft, A., & Sanson-Fisher, R. (2008). Systematic review and meta-analyses of strategies targeting alcohol problems in emergency departments: interventions reduce alcohol-related injuries. <i>Addiction</i> , 103(3), 368-376; discussion 377-368.	13	Thirteen studies were identified for inclusion in the review. Methodological quality was found to be reasonable, with the exception of poor reporting of effect-size information and inconsistent selection of outcome measures. Meta-analyses revealed that interventions did not significantly reduce subsequent alcohol consumption, but were associated with approximately half the odds of experiencing an alcohol-related injury (odds ratio = 0.59, 95% confidence interval 0.42-0.84). There are few evaluations of emergency department-based interventions for alcohol problems. Future evaluations should use consistent outcome measures and report effect sizes. The existing evidence suggests that interventions are effective in reducing subsequent alcohol-related injuries.
Huh, D., Mun, E. Y., Larimer, M. E., White, H. R., Ray, A. E., Rhew, I. C., . . . Atkins, D. C. (2015). Brief motivational interventions for college student drinking may not be as powerful as we think: an individual participant-level data meta-analysis. <i>Alcoholism, clinical and experimental research</i> , 39(5), 919-931.	22	We used Bayesian multilevel over dispersed Poisson hurdle models to estimate intervention effects on drinks per week and peak drinking, and Gaussian models for alcohol problems. Estimates of overall intervention effects were very small and not statistically significant for any of the outcomes. We further conducted post hoc comparisons of 3 intervention types (individual MI with PF, PF only, and group MI) versus control. There was a small, statistically significant reduction in alcohol problems among participants who received an individual MI with PF. Short-term and long-term results were similar. This study questions the efficacy and magnitude of effects of BMIs for college drinking prevention and intervention and suggests a need for the development of more effective intervention strategies.
Jensen, C. D., Cushing, C. C., Aylward, B. S., Craig, J. T., Sorell, D. M., & Steele, R. G. (2011). Effectiveness	21	Small, but significant, effect sizes were observed at follow-up suggesting that MI interventions for adolescent substance use retain their effect over time. MI interventions were

of motivational interviewing interventions for adolescent substance use behavior change: a meta-analytic review. <i>Journal of Consulting and Clinical Psychology</i> , 79(4), 433-440.		effective across a variety of substance use behaviors, varying session lengths, and different settings, and for interventions that used clinicians with different levels of education. The effectiveness of MI interventions for adolescent substance use behavior change is supported by this meta-analytic review. In consideration of these results, as well as the larger literature, MI should be considered as a treatment for adolescent substance use.
Jiang, S., Wu, L., & Gao, X. (2017). Beyond face-to-face individual counseling: A systematic review on alternative modes of motivational interviewing in substance abuse treatment and prevention. <i>Addictive Behaviors</i> , 73, 216-235.	25	A total of 25 articles (on 22 RCTs) were eligible for this review. Beyond face-to-face counseling, telephone was the most frequently used medium for delivering MI (11 studies), followed by Internet communication (4 studies) and short message service (SMS) (2 studies). Mail was incorporated as a supplement in one of the studies for telephone MI. In contrast to one-to-one individual counseling, group MI was adopted in 5 studies. The effectiveness of telephone MI in treating substance abuse was supported by all of the published RCTs we located. Internet-based MI was effective in preventing and treating alcoholism, but its outcome appeared to be inconsistent for smoking cessation and poor for abstinence from illicit drugs. SMS-based MI appeared to be useful for controlling tobacco and drinking. Group MI was attempted for quitting alcohol and drugs, with mixed findings on its outcomes. Collectively, the studies reviewed indicate that telephone MI is a promising mode of intervention in treating and preventing substance abuse. The effectiveness of other alternative modes (SMS-based MI, Internet-based MI and group MI) remains inconclusive given the controversial findings and a limited number of studies. By synthesizing the currently available evidence, this systematic review suggested that telephone MI might be considered as an alternative to face-to-face MI for treating and preventing substance abuse. Further research is needed to investigate the effectiveness of SMS-based MI, Internet MI, group MI and other alternative modes. Studies with methodological rigor and incorporating MI fidelity measures have great potential to advance the understanding in this field.
Kohler, S., & Hofmann, A. (2015). Can motivational interviewing in emergency care reduce alcohol consumption in young people? A systematic review and meta-analysis. <i>Alcohol and Alcoholism</i> , 50(2), 107-117.	6	MI was never less efficacious than a control intervention. Two trials found significantly more reduction in one or more measures of alcohol consumption in the MI intervention group. One trial indicated that MI may be used most effectively in young people with high-volume alcohol consumption. Separate random effects meta-analyses were performed based on the highest impact that MI added on reducing the drinking frequency and the drinking quantity at any point in time during the different study periods. Their results were expressed as standardized mean differences (SMDs). The frequency of drinking alcohol decreased significantly more after MI than after control interventions ( $SMD \leq -0.17$ , $P \leq 0.03$ ). In addition, MI reduced the drinking quantity further than control interventions in a meta-analysis of the subset of trials that were implemented in the USA ( $SMD = -0.12$ , $P = 0.04$ ). Meta-analyses of the smallest mean differences between MI and control groups detected no differences in alcohol use ( $SMD \leq 0.02$ , $P \geq 0.38$ ). MI appears at least as effective and may possibly be more effective than other brief interventions in emergency care to reduce alcohol consumption in young people.
Lenz, A. S., Rosenbaum, L., & Sheperis, D. (2016). Meta-analysis of randomized controlled trials of motivational enhancement therapy for reducing	25	Mean ESs for the 25 studies evaluating the treatment effect of MET for decreasing the amount of substance use resulted in a small-to-medium ES when compared with no treatment and a small ES against alternative interventions.

substance use. <i>Journal of Addictions &amp; Offender Counseling</i> , 37(2), 66-86.		
Li, L., Zhu, S., Tse, N., Tse, S., & Wong, P. (2016). Effectiveness of motivational interviewing to reduce illicit drug use in adolescents: A systematic review and meta-analysis. <i>Addiction</i> , 111(5), 795-805.	10	No statistically significant effect of MI on was found change of drug use behaviours [ $d = 0.05$ , 95% confidence interval (CI) = $-0.06, 0.17$ , $P = 0.36$ ]. A significant effect was found on attitude change ( $d = 0.44$ , 95% CI = $0.20, 0.67$ , $P = 0.0002$ ). The funnel plot was asymmetrical, suggesting publication bias favouring small studies with higher effect sizes. Motivational interviewing has not been found thus far to reduce adolescent use of illicit drugs. It may influence intentions to change, but evidence of publication bias weakens confidence in this conclusion.
Lundahl, B., & Burke, B. L. (2009). The effectiveness and applicability of motivational interviewing: a practice-friendly review of four meta-analyses. <i>Journal of Clinical Psychology</i> , 65(11), 1232-1245.	4*	MI is significantly (10%-20%) more effective than no treatment and generally equal to other viable treatments for a wide variety of problems ranging from substance use (alcohol, marijuana, tobacco, and other drugs) to reducing risky behaviors and increasing client engagement in treatment.  *4 meta-analyses
McQueen, J., Howe, T. E., Allan, L., Mains, D., & Hardy, V. (2011). Brief interventions for heavy alcohol users admitted to general hospital wards. <i>Cochrane Database of Systematic Reviews</i> (8).	14	Brief interventions involve a time-limited intervention focusing on changing behaviour. They are often motivational in nature using counselling skills to encourage a reduction in alcohol consumption. Fourteen studies involving 4041 mainly male participants were included. Our results demonstrate that patients receiving brief interventions have a greater reduction in alcohol consumption compared to those in control groups at six month, MD -69.43 (95% CI -128.14 to -10.72) and nine months follow up, MD -182.88 (95% CI -360.00 to -5.76) but this is not maintained at one year. Self reports of reduction of alcohol consumption at 1 year were found in favour of brief interventions, SMD -0.26 (95% CI -0.50 to -0.03). In addition there were significantly fewer deaths in the groups receiving brief interventions than in control groups at 6 months, RR 0.42 (95% CI 0.19 to 0.94) and one year follow up, RR 0.60 (95% CI 0.40 to 0.91). Furthermore screening, asking participants about their drinking patterns, may also have a positive impact on alcohol consumption levels and changes in drinking behaviour. The main results of this review indicate that there are benefits to delivering brief interventions to heavy alcohol users admitted to general hospital wards in terms of reduction in alcohol consumption and death rates. However, these findings are based on studies involving mainly male participants. Further research is required determine the optimal content and treatment exposure of brief interventions within general hospital settings and whether they are likely to be more successful in patients with certain characteristics.
Merz, V., Baptista, J., & Haller, D. M. (2015). Brief interventions to prevent recurrence and alcohol-related problems in young adults admitted to the emergency ward following an alcohol-related event: A systematic review <i>Journal of Epidemiology &amp; Community Health</i> , 69(9).	4	Four trials ( $n=618$ ) were included, comparing a brief motivational interview with usual care (2 trials), personalised feedback or an educational brochure. In two studies, motivational interview was significantly associated with a reduction in alcohol-use while two studies showed no effect attributable to the intervention. Successful interventions were either delivered at a distance from the event or included booster sessions. Motivational interview favoured a reduction in alcohol-related problems in all but one study. Benefits were sustained over 12 months.

Moyer, A., Finney, J. W., Swearingen, C. E., & Vergun, P. (2002). Brief interventions for alcohol problems: A meta-analytic review of controlled investigations in treatment-seeking and non-treatment-seeking populations. <i>Addiction</i> , 97(3), 279-292.	56	Results show small to medium aggregate effect sizes in favor of brief interventions emerged across different follow-up points. At 3+–6-mo follow-ups the effect for brief interventions compared to control conditions was significantly larger when Ss with more severe alcohol problems were excluded. For studies compared with extended treatment, effect sizes were largely not significantly different from zero. It is concluded that brief interventions are useful in opportunistic samples and as typically delivered by health-care professionals.
Orciari, E. A., Perman-Howe, P. R., & Foxcroft, D. R. (2022). Motivational Interviewing-based interventions for reducing substance misuse and increasing treatment engagement, retention, and completion in the homeless populations of high-income countries: An equity-focused systematic review and narrative synthesis. <i>International Journal of Drug Policy</i> , 100, 103524	11	MI appeared to be more effective overall amongst adult homeless persons, yielding consistently small effects, and alcohol use behaviours seemed to be more amenable to change as a result of MI/MET (Motivational Enhancement Therapy) interventions than drug use ones. Limited evidence with high risk of bias indicated that social gradient may attenuate MI effectiveness within the young homeless population, with no impact in the most disadvantaged.
Pederson, S. D., Curley, E. J., & Collins, C. J. (2021). A systematic review of motivational interviewing to address substance use with justice-involved adults. <i>Substance Use &amp; Misuse</i> , 56(5), 639-649. <a href="https://doi.org/10.1080/10826084.2021.1887247">https://doi.org/10.1080/10826084.2021.1887247</a>	5	Five RCT studies were identified. Studies were conducted using populations during incarceration in prison, prior to release from jail, through probation, and those with DWI charges. However, all of the populations included were actively being monitored for substance use. All five studies found no difference between groups at the latest point in the study, which for most included the follow-up measure. Consideration for potential moderators such as severity and type of substance use, and length of treatment and follow up data are discussed. <i>Conclusion:</i> The results of the review indicated that more standardized and rigorous research is needed for exploring MI with individuals involved with the justice system with the focus of decreasing substance use.
Riper, H., Andersson, G., Hunter, S. B., de Wit, J., Berking, M., & Cuijpers, P. (2014). Treatment of comorbid alcohol use disorders and depression with cognitive-behavioural therapy and motivational interviewing: A meta-analysis. <i>Addiction</i> , 109(3), 394-406.	12	CBT/MI proved effective for treating subclinical and clinical AUD and MDD compared with controls, with small overall effect sizes at post-treatment [ $g=0.17$ , confidence interval (CI)=0.07-0.28, $P<0.001$ for decrease of alcohol consumption and $g=0.27$ , CI: 0.13-0.41, $P<0.001$ for decrease of symptoms of depression, respectively]. Subgroup analyses revealed no significant differences for both AUD and MDD. However, digital interventions showed a higher effect size for depression than face-to-face interventions ( $g= 0.73$ and $g=0.23$ , respectively, $P=0.030$ ). Combined cognitive-behavioural therapy and motivational interviewing for clinical or subclinical depressive and alcohol use disorders has a small but clinically significant effect in treatment outcomes compared with treatment as usual.
Samson, J. E., & Tanner-Smith, E. E. (2015). Single-session alcohol interventions for heavy drinking college students: A systematic review and meta-analysis. <i>Journal of Studies on Alcohol and Drugs</i> , 76(4), 530-543.	73	An overall mean effect size of $g = 0.18$ , 95% CI [0.12, 0.24] indicated that, on average, single-session brief alcohol interventions significantly reduced alcohol use among heavy drinking college students relative to comparison conditions. There was minimal variability in effects associated with study method and quality, general study characteristics, participant demographics, or outcome measure type. However, studies using motivational enhancement therapy/motivational interviewing (MET/MI) modalities reported larger effects than those using psychoeducational therapy (PET) interventions. Further investigation revealed that studies using MET/ MI and feedback-only interventions, but not those using cognitive-behavioral therapy or PET modalities, reported average effect sizes that differed significantly from zero. There was also evidence that long-term effects were weaker than short-term

		effects. Single-session brief alcohol interventions show modest effects for reducing alcohol consumption among heavy drinking college students and may be particularly effective when they incorporate MET/MI principles. More research is needed to directly compare intervention modalities, to develop more potent interventions, and to explore the persistence of long-term effects.
Sayegh, C. S., Huey, S. J., Zara, E. J., & Jhaveri, K. (2017). Follow-up treatment effects of contingency management and motivational interviewing on substance use: A meta-analysis. <i>Psychology of Addictive Behaviors</i> , 31(4), 403-414.	82	Collapsed across all substance types, CM had a significant effect at 3-month follow-up, only. In contrast, MI had a significant effect at 6-month follow-up, only. CM had small and medium effects on multiple substances at 3-month follow-up (i.e., tobacco, marijuana, stimulants, polysubstances), but not at 6-month follow-up. MI had 1 significant medium effect at 3-month follow-up (i.e., marijuana), but several significant small effects at 6-month follow-up (i.e., alcohol, tobacco, polysubstances). This meta-analysis suggests that both CM and MI promote reductions in a range of substances, even several months after the intervention concludes. Further, these results provide some evidence that extrinsically focused CM may produce medium follow-up effects in the short run, but intrinsically focused MI may produce small but durable follow-up effects. However, this interpretation is complicated by the differences between the MI and CM studies that preclude statistical tests comparing effect sizes, and few studies assessed motivation itself. Future researchers should investigate how motivational dynamics impact lasting outcomes in substance use treatment.
Smedslund, G., Berg, R. C., Hammerstrom, K. T., Steiro, A., Leiknes, K. A., Dahl, H. M., & Karlsen, K. (2011). Motivational interviewing for substance abuse. <i>The Cochrane database of systematic reviews</i> (5), CD008063.	59	We included 59 studies with a total of 13,342 participants. Compared to no treatment control MI showed a significant effect on substance use which was strongest at post-intervention SMD 0.79, (95% CI 0.48 to 1.09) and weaker at short SMD 0.17 (95% CI 0.09 to 0.26], and medium follow-up SMD 0.15 (95% CI 0.04 to 0.25)]. For long follow-up, the effect was not significant SMD 0.06 (95% CI-0.16 to 0.28). There were no significant differences between MI and treatment as usual for either follow-up post-intervention, short and medium follow up. MI did better than assessment and feedback for medium follow-up SMD 0.38 (95% CI 0.10 to 0.66). For short follow-up, there was no significant effect . For other active intervention there were no significant effects for either follow-up. There was not enough data to conclude about effects of MI on the secondary outcomes. MI can reduce the extent of substance abuse compared to no intervention. The evidence is mostly of low quality, so further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Steinka-Fry, K. T., Tanner-Smith, E. E., & Hennessy, E. A. (2015). Effects of brief alcohol interventions on drinking and driving among youth: A systematic review and meta-analysis. <i>Journal of Addiction &amp; Prevention</i> , 3(1).	12	Compared with controls, participants in brief alcohol interventions reported reduced drinking and driving and related consequences ( $g = 0.15$ , 95% CI [0.08, 0.21]). Supplemental analyses indicated that reductions in driving while intoxicated were positively associated with the reduced post-intervention heavy use of alcohol. These findings were not attenuated by study design or implementation factors. Brief alcohol interventions under 5 hours of contact may constitute a promising preventive approach targeting drinking and driving among adolescents and young adults. Reducing heavy episodic alcohol consumption appeared to be a major factor in reducing drunk-driving instances. Interpretation of the findings must be made with caution, however, given the possibility of publication bias and the small observed effect size. Future research should focus on the exact mechanisms of behavior change leading to

		beneficial outcomes of brief alcohol interventions and the potential effectiveness of combined brief interventions and other preventive approaches.
Tanner-Smith, E. E., & Lipsey, M. W. (2015). Brief alcohol interventions for adolescents and young adults: a systematic review and meta-analysis. <i>Journal of Substance Abuse Treatment</i> , 51, 1-18.	185	We identified 185 eligible study samples using a comprehensive literature search and synthesized findings using random-effects meta-analyses with robust standard errors. Overall, brief alcohol interventions led to significant reductions in alcohol consumption and alcohol-related problems among adolescents ( $g = 0.27$ and $g = 0.19$ ) and young adults ( $g = 0.17$ and $g = 0.11$ ). These effects persisted for up to 1 year after intervention and did not vary across participant demographics, intervention length, or intervention format. However, certain intervention modalities (e.g., motivational interviewing) and components (e.g., decisional balance, goal-setting exercises) were associated with larger effects. We conclude that brief alcohol interventions yield beneficial effects on alcohol-related outcomes for adolescents and young adults that are modest but potentially worthwhile given their brevity and low cost.
Tanner-Smith, E. E., & Risser, M. D. (2016). A meta-analysis of brief alcohol interventions for adolescents and young adults: Variability in effects across alcohol measures. <i>The American Journal of Drug and Alcohol Abuse</i> , 42(2), 140-151.	190	Brief alcohol interventions led to significant reductions in self-reported alcohol use among adolescents ( $g = 0.25$ , 95% credible interval [CrI 0.13, 0.37]) and young adults ( $g = 0.15$ , 95% CrI [0.12, 0.18]). These results were consistent across outcomes with varying reference periods, but varied across outcome construct type and assessment instruments. Among adolescents, effects were larger when measured using the Timeline Followback; among young adults, effects were smaller when measured using the Alcohol Use Disorders Identification Test. CONCLUSION: The strength of the beneficial effects of brief alcohol interventions on youth's alcohol use may vary depending upon the outcome measure utilized. Nevertheless, significant effects were observed across measures. Although effects were modest in size, they were clinically significant and show promise for interrupting problematic alcohol use trajectories among youth.
Tanner-Smith, E. E., Steinka-Fry, K. T., Hennessy, E. A., Lipsey, M. W., & Winters, K. C. (2015). Can brief alcohol interventions for youth also address concurrent illicit drug use? results from a meta-analysis. <i>Journal of Youth and Adolescence</i> , 44(5), 1011-1023.	30	A comprehensive literature search identified 30 eligible study samples that, on average, included participants age 17, with 57 % male participants and 56 % White youth. Three-level random-effects meta-analyses were used to estimate mean effect sizes and explore variability in effects. Overall, brief interventions targeting both alcohol and other drugs were effective in reducing both of these substances. However, the brief interventions that targeted only alcohol had no significant secondary effects on untargeted illicit drug use. The evidence from current research, therefore, shows modest beneficial effects on outcomes that are targeted by brief interventions for youth, but does not show that those effects generalize to untargeted illicit drug use outcomes.
Vasilaki, E. I., Hosier, S. G., & Cox, W. M. (2006). The efficacy of motivational interviewing as a brief intervention for excessive drinking: A meta-analytic review. <i>Alcohol &amp; Alcoholism</i> , 41(3), 328-335.	22	Aggregate effect size of 0.43(95% C.I. 0.17, 0.70). The literature review pointed to several factors which may influence MI's long-term efficacy effectiveness of MI. Brief MI is effective. Future studies should focus on possible predictors of efficacy such as gender, age, employment status, marital status, mental health, initial expectations, readiness to change, and whether the population is drawn from treatment-seeking or non-treatment-seeking populations. Also, the components of MI should be compared to determine which are most responsible for maintaining long-term changes.
Wilk, A. I., Jensen, N. W., & Havighurst, T. C. (1997). Meta-analysis of randomized control trials addressing	12	Twelve RCTs met all inclusion criteria, with an average quality score of $0.49 \pm 0.17$ . This was comparable to published average scores in other areas of research ( $0.42 \pm 0.16$ ). Outcome data from RCTs were pooled, and a combined OR was close to 2

brief interventions in heavy alcohol drinkers. <i>Journal of General Internal Medicine</i> , 12(5), 274-283.		(1.91; 95% confidence interval 1.61–2.27) in favor of brief alcohol interventions over no intervention. This was consistent across gender, intensity of intervention, type of clinical setting, and higher-quality clinical trials. Heavy drinkers who received a brief intervention were twice as likely to moderate their drinking 6 to 12 months after an intervention when compared with heavy drinkers who received no intervention. Brief intervention is a low-cost, effective preventive measure for heavy drinkers in outpatient settings.
<b>Anxiety and Mood Disorders</b>		
Marker, I., & Norton, P. J. (2018). The efficacy of incorporating motivational interviewing to cognitive behavior therapy for anxiety disorders: A review and meta-analysis. <i>Clinical Psychology Review</i> , 62, 1-10.	12	Motivational Interviewing (MI) has been suggested as an adjunct to Cognitive Behavior Therapy (CBT) for anxiety disorders. Although preliminary evidence suggests that MI as a prelude to CBT (MI + CBT) improves various aspects of treatment from initial engagement, overall symptom reduction, and treatment drop out rate, results are inconsistent. The current meta-analysis combined the findings of 12 trials examining the efficacy of MI + CBT in comparison to CBT alone. Across studies, MI + CBT outperformed standard CBT in terms of overall anxiety symptom reduction, Hedges $g = 0.59$ . Drop out rates were not significantly different between groups. Moderator analyses revealed no significant differences based on specific anxiety diagnosis or dose of MI. The findings of this meta-analysis suggest that MI as an adjunct to CBT for anxiety disorders improves treatment outcome, in comparison to CBT alone. Limitations of the study and future research directions are explored.
Randall, C. L., & McNeil, D. W. (2017). Motivational interviewing as an adjunct to cognitive behavior therapy for anxiety disorders: A critical review of the literature. <i>Cognitive &amp; Behavioral Practice</i> , 24(3), 296-311.	11	Findings are summarized from 6 case studies and uncontrolled trials and 11 randomized controlled trials published through March 2016. An integrated critique of this literature also is offered. Limitations and the preliminary nature of the work in this area notwithstanding, it appears that it is feasible to supplement or integrate CBT with MI and that doing so has the potential to improve treatment initiation and engagement, as well as clinical outcomes. A number of directions for future research are addressed, such as determining which MI approaches to implement, with whom, when, and in what contexts.
<b>Audiology</b>		
Liu, A., Wu, B., & Nunez, D. A. (2021). Motivational interviewing for hearing aid use: A systematic meta-analysis on its potential for adult patients with hearing loss. <i>Journal of the American Academy of Audiology</i> , 32(6), 332-338.	4	The standardized mean difference in data-logged hours of HA use was not statistically significant (0.34 [95% confidence interval or CI: $-0.10, 0.78$ ; $p = 0.13$ ]). The mean difference for user-reported outcomes on the International Outcome Inventory—Hearing Aids of 0.41 [CI: $-1.00, 1.82$ ; $p = 0.57$ ] was also not significant. Conclusion There is no current evidence that MI significantly improves HA use or user-reported outcomes. However, there were limited studies included in this review and further research is indicated.
<b>Cancer</b>		
Chan, D. N. S., & So, W. K. W. (2021). Effectiveness of motivational interviewing in enhancing cancer screening uptake amongst average-risk individuals: A systematic review. <i>International Journal of Nursing Studies</i> , 113, 103786.	6	The findings show that motivational interviewing that used a face-to-face and telephone-based approach or were used together with a tailored or reminder letter enhanced the participants' uptake of breast and cervical cancer screening and their intention to undergo future cervical cancer screening. Mixed results were observed in the effectiveness of single-contact motivational interviewing on colorectal cancer screening. The use of motivational interviewing has demonstrated improvements in the uptake of breast and cervical cancer screening.



Pourebrahim-Alamdari, P., Mehrabi, E., Nikkhesal, N., Nourizadeh, R., Esmaeilpour, K., & Mousavi, S. (2021). Effectiveness of motivationally tailored interventions on cervical cancer screening: A systematic review and meta-analysis. <i>International Journal of Women's Health and Reproduction Sciences</i> , 9(1).	7	The result of our study showed that different motivational interventions (MIs) (i.e., face-to-face interviews, consultation sessions or calls, and educational programs) can effectively improve cervical cancer screening behavior in women. Overall, motivational interventions (MIs) seem to be effective in cervical cancer screening.
Pudkasam, S., Feehan, J., Talevski, J., Vingrys, K., Polman, R., Chinlumprasert, N., Stojanovska, L., & Apostolopoulos, V. (2021). Motivational strategies to improve adherence to physical activity in breast cancer survivors: A systematic review and meta-analysis. <i>Maturitas</i> , 152, 32-47.	10	Subgroup analysis was performed for three motivational strategies (pedometer combined with counselling, with print material or with motivational interviewing). Meta-analysis showed that pedometer combined with another intervention has a small effect on step count ( $p = 0.03$ ) and a moderate effect on duration of moderate-vigorous physical activity (MVPA) ( $p = <0.0001$ ) compared to controls. Additionally, motivational strategies increase the number of participants who meet a PA goal ( $p = 0.005$ ). The findings of this review endorse the use of a step tracker combined with counselling, print material or MI based on behavioral change theory.
Spencer, J. C., & Wheeler, S. B. (2016). A systematic review of motivational interviewing interventions in cancer patients and survivors. <i>Patient Education and Counseling</i> , 99(7), 1099-1105.	15	We included 15 studies in our analysis. Studies addressed behaviors such as diet, exercise, smoking cessation, cancer-related stress, and fatigue management. Counseling sessions varied in frequency and method of delivery, although telephone-based interventions were common. Trained oncology nurses often delivered MI sessions, and the majority of interventions included quality assessment to verify fidelity of MI techniques. Solid evidence exists for the efficacy of MI to address lifestyle behaviors as well as the psychosocial needs of cancer patients and survivors. More research is needed on the use of MI for self-management of cancer-related symptoms. PRACTICE IMPLICATIONS: Motivational Interviewing is a promising technique for addressing many types of behavior change in cancer patients or survivors. Intervention design must be sensitive to cancer type, phase of care, and complexity of desired behavior.
<b>Cardiovascular</b>		
Bohplian, S., & Bronas, U. G. (2021 in press). Motivational strategies and concepts to increase participation and adherence in cardiac rehabilitation: An integrative review. <i>Journal of Cardiopulmonary Rehabilitation and Prevention</i>	8	Use of Motivational Interviewing led to improving the CR completion rate from 14% to 39%.
Cheng, D., Qu, Z., Huang, J., Xiao, Y., Luo, H., & Wang, J. (2015). Motivational interviewing for improving recovery after stroke. <i>The Cochrane database of systematic reviews</i> (6), CD011398.	1	One study involving a total of 411 participants, which compared motivational interviewing with usual care, met our inclusion criteria. The results of this review did not show significant differences between groups receiving motivational interviewing or usual stroke care for participants who were not dependent on others for activities of daily living, nor on the death rate after three-month and 12-month follow-up, but participants receiving motivational interviewing were more likely to have a normal mood than those who received usual care at three-months and 12-months follow-up. There is insufficient evidence to support the use of motivational interviewing for improving activities of daily living after stroke. Further well designed RCTs are needed.
Chew, H. S. J., Cheng, H. Y., & Chair, S. Y. (2019). The suitability of motivational interviewing versus	12	Current psychoeducational interventions are effective in improving heart failure self-care but insufficient to sustain it. Motivational interviewing seems to have a higher potential than

cognitive behavioural interventions on improving self-care in patients with heart failure: A literature review and discussion paper. <i>Applied Nursing Research</i> , 45, 17-22.		cognitive behavioural interventions in improving heart failure self-care. Combining both methods could have a synergistic effect on enhancing heart failure self-care. However, more trials are needed to compare both methods on improving self-care and more research is needed to explore the intention-behaviour link in heart failure self-care behaviour change.
Ghizzardi, G., Arrigoni, C., Dellafiore, F., Vellone, E., & Caruso, R. (2021 in press). Efficacy of motivational interviewing on enhancing self-care behaviors among patients with chronic heart failure: A systematic review and meta-analysis of randomized controlled trials. <i>Heart Failure Reviews</i> .	9	Nine randomized controlled trials were included. MI showed moderate effects on enhancing self-care confidence (Hedge's $g = 0.768$ ; 95%CI = 0.326–1.210; $P = 0.001$ ) and self-care management (i.e., responses to symptoms) (Hedge's $g = 0.744$ ; 95%CI = 0.256–1.232; $P = 0.003$ ) and large effects on improving self-care maintenance (i.e., adherence to treatment and symptom monitoring) (Hedge's $g = 0.873$ ; 95%CI = 0.430–1.317; $P < 0.001$ ). No significant effects were found for enhancing the self-reported physical functioning (Hedge's $g = -0.385$ ; 95%CI = -1.063–0.294; $P = 0.267$ ) or the directly assessed physical functioning using the 6-min walking test (Hedge's $g = -0.131$ ; 95%CI = -0.981–0.720; $P = 0.072$ ). This study showed that MI is an effective strategy to improve self-care in patients with heart failure.
Lee, W. W. M., Choi, K. C., Yum, R., Yu, D. S. F., & Chair, S. Y. (2016). Effectiveness of motivational interviewing on lifestyle modification and health outcomes of clients at risk or diagnosed with cardiovascular diseases: A systematic review. <i>International Journal of Nursing Studies</i> , 53(1), 331-341.	9	After eligibility screening, 14 articles describing 9 studies satisfied the inclusion criteria and were included in the analysis. Only certain outcomes in certain studies were pooled for meta-analysis because of the large variability of the studies included, other findings were presented in narrative form. For lifestyle modification, the review showed that motivational interviewing could be more effective than usual care on altering smoking habits. For physiological outcomes, the review showed that motivational interviewing positively improved client's systolic and diastolic blood pressures but the result was not significant. For psychological outcomes, the review showed that motivational interviewing might have favorable effect on improving clients' depression. For other outcomes, the review showed that motivational interviewing did not differ from usual care or usual care was even more effective. The review showed that motivational interviewing might have favorable effects on changing clients' smoking habits, depression, and three SF-36 domains. For the other outcomes, most of the results were inconclusive. Further studies should be performed to identify the optimal format and frequency of motivational interviewing. Primary research on the effectiveness of motivational interviewing on increasing clients' motivation and their actual changes in healthy behavior is also recommended.
Lovino, P., Baricchi, M., Ghizzardi, G., Trenta, A. M., Caruso, R., Arrigoni, C., Pedroni, C., Dellafiore, F., & Gianluca Pucciarelli, E. V. (2021). Technology-delivered motivational interviewing interventions for patients with cardiovascular diseases - A systematic review. <i>Circulation</i> , 144, 12984.	7	The only feasible meta-analysis showed no significant effects of TD-MI on depression ( $n=3$ ; $Z=1.18$ , $p=0.24$ ; $I^2=42\%$ ).
Mifsud, J. (2019). Effectiveness of primary preventive programmes using motivational interviewing to support cardiovascular risk factor modification in individuals at increased risk: A systematic review and meta-analysis of randomised controlled trials. Masters thesis, University of Huddersfield.	7	Seven studies met inclusion criteria. No statistical difference between groups for smoking status and physical activity were reported. A random effects analysis from 3 studies, determined a synthesized estimate for standardised mean difference in weight of -2.60kg (95% CI -4.793 to -0.404 kg; $p=0.005$ ), with high statistical heterogeneity. Pooled results from 2 studies, determined a mean difference in LDL-c of 0.43mg/dl, but was insignificant. A range of possible effective intervention characteristics were identified: application of affirmation, compassion and evocation, combined with education, consisting of 1 in person and 12

		telephone-based sessions of 15 to 30 minutes each for 12 consecutive weeks, delivered by a nurse expert in MI through an outpatient-clinic.
Poudel, N., Kavookjian, J., & Scalese, M. J. (2020). Motivational interviewing as a strategy to impact outcomes in heart failure patients: A systematic review. <i>The Patient - Patient Centred Outcomes Research</i> , 13(1), 43-55.	9	MI demonstrated a positive effect on the SCB hospital readmission prevention factor and on QoL. MI delivered with greater frequency and over a longer duration may improve the immediate risk of hospital readmission as well as long-term outcomes through better medication adherence and SCBs. However, heterogeneity in the methods, design, intervention type, and structure challenged comparisons across studies and further research is warranted.
Qiqi, N., Hangting, L., Jia, W., Jiaoni, S., Xinrui, W., & Guijuan, H. (2021). A meta-analysis of the effect of motivational interviewing on depression, anxiety, and quality of life in stroke patients. <i>Journal of Neuroscience Nursing</i> , 53(6), 244-250.	6	The subgroup analysis revealed that motivational interviewing was associated with improvement of depression ( $P < .00001$ ) and quality of life ( $P = .0007$ ) among patients having stroke at less than 12 months of follow-up. No significant differences were detected for improving depression ( $P = .40$ ) and quality of life ( $P = .38$ ) at 12 months of follow-up. Furthermore, the meta-analysis showed that motivational interviewing was not associated with alleviation of anxiety ( $P = .81$ ) among stroke patients.
Sokalski, T., Hayden, K. A., Raffin Bouchal, S., Singh, P., & King-Shier, K. (2020). Motivational interviewing and self-care practices in adult patients with heart failure: A systematic review and narrative synthesis. <i>Journal of Cardiovascular Nursing</i> , 35(2), 107-115.	7	Outcomes were focused on self-care adherence (ie, maintenance, management, confidence), physical activity/exercise, and knowledge of self-care. Motivational interviewing has been effectively used either alone or in combination with other therapies and has been used in-home, over the telephone, and in hospital/clinic settings, although face-to-face interventions seem to be more effective. A number of limitations were noted in the included studies. Motivational interviewing is a potentially effective adjunct to enhance self-care practices in patients with heart failure. Further high-quality research is needed to support changes in clinical practice.
Thompson, D. R., Chair, S. Y., Chan, S. W., Astin, F., M., D. P., & Ski, C. F. (2011). Motivational interviewing: A useful approach to improving cardiovascular health? <i>Journal of Clinical Nursing</i> , 20(9-10), 1236-1244.	13*	Four meta-analyses, one systematic review and three literature reviews of motivational interviewing and five primary studies of motivational interviewing pertaining to cardiovascular health settings, there appears to be strong evidence that motivational interviewing is an effective approach focusing on eliciting the person's intrinsic motivation for change of behaviour. Motivational interviewing is an effective approach to changing behaviour. It offers promise in improving cardiovascular health status.  *Mixture of reviews and primary studies
<b>Chronic Pain</b>		
Alperstein, D., & Sharpe, L. (2016). The efficacy of motivational interviewing in adults with chronic pain: A meta-analysis and systematic review. <i>Journal of Pain</i> , 17(4), 393-403.	7	These results indicate that MI can probably increase short-term adherence to chronic pain treatments, although publication bias cannot be ruled out. Further, it is as yet unclear whether these effects result in improvements in patient function. Although the studies were methodologically strong, they investigated MI in relation to a number of treatments for chronic pain. Future research on the efficacy of MI on adherence to evidence-based self-management interventions for chronic pain is needed. PERSPECTIVE: MI significantly increased adherence to prescribed chronic pain treatments in the short term, however, effect sizes were small to moderate and publication bias was likely. MI showed some promise in

		promotion of adherence to pain treatments, but more research is required to confirm its efficacy.
		<b>Cystic Fibrosis</b>
Duff AJ, Latchford GJ. (2010). Motivational interviewing for adherence problems in cystic fibrosis. <i>Pediatric Pulmonology</i> , 45(3):211-20.		This review focuses on adherence in cystic fibrosis (CF), and the factors known to influence it. In particular, it discusses the importance of effective communication in clinical settings and considers the evidence for the effectiveness of motivational interviewing (MI), to increase adaptation and adherence in physical health and CF. The review also contains an overview of the key concepts of MI, its' practice in medical settings and recommendations on how to adopt MI techniques in the routine care of people with CF.
		<b>Dentistry</b>
Albino, J., & Tiwari, T. (2016). Preventing childhood caries: A review of recent behavioral research. <i>Journal of Dental Research</i> , 95(1), 35-42.	4	Only those reports published since 2011 were considered. Outcomes were variable, although motivational interviewing, which involves individuals in decisions about oral health within the context of their respective life circumstances, proved effective in 3 of 4 reported studies, and more definitive trials are underway. Recommendations for future research include examinations of the cost-effectiveness of interventions, as well as work focused on understanding the mechanisms underlying oral health behavior change and variables that may mediate or moderate responses to interventions.
Borelli, B., Tooley, E. M., & Scott-Sheldon, L. A. J. (2015). Motivational interviewing for parent-child health interventions: A systematic review and meta-analysis. <i>Pediatric Dentistry</i> , 37(3), 254-265.	25	Relative to comparison groups, MI was associated with significant improvements in health behaviors (e.g., oral health, diet, physical activity, reduced screen time, smoking cessation, reduced second hand smoke) and reduction in body mass index. Results suggest that MI may also outperform comparison groups in terms of dental caries, but more studies are needed. MI interventions were more successful at improving diets for Caucasians and when the intervention included more MI components. Our findings provide support for providing motivational interviewing to parents and children to improve pediatric health behaviors.
Brennan, R., & O'Driscoll, R. (2021). A scoping review of the use of motivational interviewing in oral healthcare settings. <i>Journal of the Irish Dental Association</i> , 67(5), 272-276.	50	Findings indicate that there is a heterogeneous literature base on the use of MI in the oral healthcare setting of varying quality. However, evidence is building for positive outcomes where MI training has contributed to increased confidence, professionalism and relationship building in oral healthcare practitioners, and improved oral healthcare outcomes in patients across a range of oral health issues and oral healthcare prevention
Cascaes, A. M., Bielemann, R. M., Clark, V. L., & Barros, A. J. D. (2014). Effectiveness of motivational interviewing at improving oral health: A systematic review. <i>Revista de Saúde Pública</i> 48(1), 142-153.	10	Of the 78 articles found, ten met the inclusion criteria, all based on randomized controlled trials. Most studies (n = 8) assessed multiple outcomes. Five interventions assessed the impact of MI on oral health behaviors and nine on clinical outcomes (three on dental caries, six on dental plaque, four on gingivitis and three on periodontal pockets). Better quality of evidence was provided by studies that investigated dental caries, which also had the largest population samples. The evidence of the effect of MI on improving oral health outcomes is conflicting. Four studies reported positive effects of MI on oral health outcomes whereas another four showed null effect. In two interventions, the actual difference between groups was not reported or able to be recalculated. We found inconclusive effectiveness for most oral health outcomes. We need more and better designed and reported interventions to fully assess the impact of MI on oral health and understand the appropriate dosage for the counseling interventions.

Colvara, B. C., Faustino-Silva, D. D., Meyer, E., Hugo, F. N., Celeste, R. K., & Hilgert, J. B. (2021). Motivational interviewing for preventing early childhood caries: A systematic review and meta-analysis. <i>Community Dentistry and Oral Epidemiology</i> , 49(1), 10-16.	8	In populations with high caries experience, the MI-based approach proved preventing an average of 3.15 (95% CI: -6.14, -0.17) dmfs in young children. In samples with low caries experience, differences were smaller, since the caries levels were already lower (-0.31; 95% CI: -0.63, 0.00). Motivational interviewing has the potential to modify knowledge and behaviours and reduce ECC with a more significant impact on children with high caries experience.
Faghihian, R., Faghihian, E., Kazemi, A., Tarrahi, M. J., & Zakizade, M. (2020). Impact of motivational interviewing on early childhood caries: A systematic review and meta-analysis. <i>Journal of the American Dental Association</i> , 151(9), 650-659.	14	Of 329 articles retrieved initially, 14 were eligible for inclusion in the systematic review and 3 articles contributed to the meta-analysis. For statistical analysis, the mean difference of continuous data was analyzed at a 95% confidence interval using the random-effects model. Overall, the evidence presented in this review was limited. Although the results of the meta-analysis showed that motivational interviewing is as effective as dental health education in controlling early childhood caries, we need more and better designed and reported interventions to assess its impact on early childhood caries accurately.
Gao, X., Lo, E. C. Y., Kot, S. C. C., & Chan, K. C. W. (2014). Motivational interviewing in improving oral health: A systematic review of randomized controlled trials. <i>Journal of Periodontology</i> , 85(3), 426-437.	16	The search yielded 221 potentially relevant papers, among which 20 papers (on 16 studies) met the eligibility criteria. The quality of the studies varied from 10 to 18 out of a highest possible score of 21. Concerning periodontal health, superior effect of MI on oral hygiene was found in five trials and was absent in two trials. Two trials targeting smoking cessation in adolescents failed to generate a positive effect. MI outperformed CE in improving at least one outcome in four studies on preventing early childhood caries, one study on adherence to dental appointments, and two studies on abstinence of illicit drugs and alcohol use to prevent the reoccurrence of facial injury. Reviewed randomized controlled trials showed varied success of MI in improving oral health. The potential of MI in dental health care, especially on improving periodontal health, remains controversial. Additional studies with methodologic rigor are needed for a better understanding of the roles of MI in dental practice.
Kay, E. J., Vascott, D., Hocking, A., & Nield, H. (2016). Motivational interviewing in general dental practice: A review of the evidence. <i>British Dental Journal</i> , 221(12), 785-791.	8	This review included eight papers all of which were considered to be of robust quality, in terms of their research methods and seven of which were considered to offer externally valid findings. Five described randomised controlled trials and all of these RCTs demonstrated that interventions including motivational interviewing had a positive effect on oral health and health behaviour. Conclusions This review shows that the motivational interviewing technique, which is based on the concept of autonomy support, has potential for helping patients with poor oral health. Training in motivational interviewing for dental personnel could be a very useful addition to the skill set of practitioners and dental teams.
Kopp, S. K., Ramseier, C. A., Ratka-Krüger, P., & Woelber, J. P. (2017). Motivational interviewing as an adjunct to periodontal therapy: A systematic review. <i>Frontiers in Psychiatry</i> .	5	The search yielded 496 articles. After analysis and exclusion, a total of five papers could be included. The quality of the articles ranged between 72–88%. The two independent raters showed a high inter-rater reliability (Cohens-Kappa = 0.89). In two studies MI showed a significant positive effect on bleeding on probing and plaque values. One study showed improvement of self-efficacy in interdental cleaning. Two studies showed no influence of MI on periodontal parameters of the patients.

	Diabetes	
Berhe, K. K., Gebru, H. B., & Kahsay, H. B. (2020). Effect of motivational interviewing intervention on HgbA1C and depression in people with type 2 diabetes mellitus (systematic review and meta-analysis). <i>PloS one</i> , 15(10), e0240839.	8	Of the total identified 121 studies, eight were eligible for inclusion in the review. The pooled results showed that MI resulted in a significant improvement of mean HgbA1C level in the intervention group when compared with the control group ( <i>WMD</i> , -0.29; 95% <i>CI</i> , -0.47 to -0.10; <i>p</i> = 0.003, <i>I</i> <sup>2</sup> = 48%).
Chapman, A., Liu, S., Merkuris, S., Enticott, J. C., Yang, H., Browning, C. J., & Thomas, S. A. (2015). Psychological interventions for the management of glycemic and psychological outcomes of type 2 diabetes mellitus in China: A systematic review and meta-analyses of randomized controlled trials. <i>Frontiers in Public Health</i> , 3, 252.	45	Cognitive behavioral therapy (CBT) and motivational interviewing (MI) were more effective than the control condition in the reduction of glycated hemoglobin [CBT: -0.97 (95% CI -1.37 to -0.57); MI: -0.71 (95% CI -1.00 to -0.43)]. CBT and client-centered therapy (CCT) were also associated with reductions in depression and blood glucose concentration, and CBT was associated with reductions in anxiety. Psychological interventions, namely, CBT, MI, and CCT are effective in improving certain T2DM-related outcomes in China. Considerable levels of heterogeneity and unclear risk of bias associated with most included RCTs suggest caution when interpreting results. In China, where the burden of T2DM is increasing significantly, psychological interventions may provide promising approaches to assist in the management of T2DM to delay the progression of T2DM related outcomes.
Concert, C. M., Burke, R. E., Eusebio, A. M., Slavin, E. A., & Shortridge-Baggett, L. M. (2012). The effectiveness of motivational interviewing on glycemic control for adults with type 2 diabetes mellitus (DM2): A systematic review. <i>JBIM library of systematic reviews</i> , 10(42 Suppl), 1-17.	?	Motivational interviewing has been shown to be effective in counseling patients towards behaviour change in smoking cessation, increasing exercise, and reducing alcohol consumption. While combined effect estimates including body mass index (BMI) show a significant effect for MI, combined effect estimates for cigarettes per day and glycosylated haemoglobin (HbA1c) were not significant. Isolated effects of MI on BMI and/or HbA1c have not been identified. Strong clinical evidence suggests that patients with diabetes should achieve certain clinical goals such as lowering HbA1c to reduce morbidity and mortality. Motivational interviewing is a technique that is effective in behaviour change and could potentially be effective with achieving these goals. MI may lead to improved quality of life, health status and clinical outcomes for persons with type 2 diabetes through empowerment and supporting informed decision-making, self-care behaviors, and problem-solving, with active participation and collaboration with the interdisciplinary health care team
Dehghan-Nayeri, N., Ghaffari, F., Sadeghi, T., & Mozaffari, N. (2019). Effects of motivational interviewing on adherence to treatment regimens among patients with type 1 diabetes: A systematic review. <i>Diabetes Spectrum</i> , 32(2), 112-117.	4	MI is effective in enhancing patients' adherence to the treatment regimen and thereby decreasing A1C. Given the fact that the reviewed studies had not eliminated the effects of confounding factors, further studies are needed to assess the pure effects of MI on adherence to treatment regimens and A1C levels.
Ekong, G., & Kavookjian, J. (2016). Motivational interviewing and outcomes in adults with type 2 diabetes: A systematic review. <i>Patient Education and Counseling</i> , 99(6), 944-952.	14	Of the initial 159 studies identified, 14 were eligible for retention. Behavior targets in the retained studies included dietary changes, physical activity, smoking cessation, and alcohol reduction. MI had significant impact on some dietary behaviors and on weight loss. MI intervention structures were heterogeneous across studies; fidelity assessment was infrequent. The effects of MI interventions on outcomes in T2D showed promising results for dietary behaviors. Clinical change outcomes from MI-based interventions were most favorable for weight management in T2D. Behavior-



		specific MI interventions may positively influence study outcomes. Assessment of MI intervention fidelity will enhance treatment integrity and claims for validity.
Jones, A., Gladstone, B. P., Lübeck, M., Lindekilde, N., Upton, D., & Vach, W. (2014). Motivational interventions in the management of HbA1c levels: A systematic review and meta-analysis <i>Primary Care Diabetes</i> , 8(2), 91-100.	13	<p>Aims To review the diabetes literature in order to examine the effect of motivational interventions on treatment outcome as measured by changes in glycated haemoglobin.</p> <p>Methods Relevant databases were systematically searched for randomised controlled trials in which motivational interventions were examined in relation to treatment outcome in people with type 1 and type 2 diabetes mellitus. Results The 13 studies identified for review included 1223 participants diagnosed with type 1 diabetes and 1895 participants diagnosed with type 2 diabetes. The analysis showed a 0.17% (95% CI: -0.09, 0.43%) improvement in glycemic control in people who received a motivational intervention compared to a control group, however, the effect was not statistically significant. Conclusions The impact of motivational interventions in the management of blood glucose levels appears to be limited. However, due to the small number of studies and issues of heterogeneity caution in interpreting the present findings is advised. Moreover, the unique contribution of motivational interventions may be better assessed by outcomes such as behaviour change and other intermediate outcomes. Further research examining the delivery and focus of motivational interventions in helping people manage their diabetes is recommended. The clinical implications of the present findings are therefore uncertain pending further research.</p>
Lee Jia Qian. (2021). Effectiveness of Motivational Interviewing on patients with Type 2 Diabetes Mellitus: A Systematic Review and Meta-Analysis.. <i>ScholarBank@NUS Repository</i> . <a href="https://scholarbank.nus.edu.sg/handle/10635/193922">https://scholarbank.nus.edu.sg/handle/10635/193922</a>	6	Out of the initial 285 studies screened for eligibility, only 6 RCTs were retained. More than half of the studies (58%) had a low risk of bias across six domains. The overall quality of evidence for glycated haemoglobin (HbA1c) outcome was moderate according to GRADE criteria, and very low evidence for BMI outcome. Meta-analyses revealed that T2DM patients who underwent MI intervention had significant improvement in HbA1c outcomes, but no change in BMI and cholesterol levels. Subgroup analyses suggested that MI training conducted face to face is more effective as compared to telephone-delivered MI. Patients in MI groups were also better motivated to change behaviours, as seen in better PEI scores, and showed more satisfaction in treatment observed by better DTSQ scores. They also obtained greater self-efficacy in disease management after going through MI interventions, as reflected by greater scores in the Sherer's self-efficacy scale. Lastly, MI group patients have lower PAID scores, which suggests that they possibly experienced less distress as compared to their usual care counterparts.
Lestari, S. P., Wihastuti, T. A., & Ismail, D. D. S. L. (2021 in press). The effectiveness of motivational interviewing on the selfmanagement of type 2 diabetes mellitus patients: A systematic review. <i>Jurnal Kedokteran Brawijaya</i> , 31(4).	20	:The results of the systematic review obtained that MI can provide improved self-management and control blood glucose DM type 2 patients. Conclusion: motivational interviewing can affect the patient's self-management especially on blood glucose profile, dietary compliance, quality of life, self-efficacy, Hba1c levels of DM type 2 patients
McDaniel, C. C., Kavookjian, J., & Whitley, H. P. (2021 in press). Telehealth delivery of motivational interviewing for diabetes management: A systematic review of randomized controlled trials. <i>Patient Education and Counseling</i> . <a href="https://doi.org/https://doi.org/10.1016/j.pec.2021.07.036">https://doi.org/https://doi.org/10.1016/j.pec.2021.07.036</a>	21	Among the most commonly investigated outcomes, 60% of articles documented A1C reductions (ranging from <1% to >3%), 56% documented systolic blood pressure reductions, 57% documented diabetes self-efficacy/empowerment improvements, and 40% documented physical activity improvements. MI-based telehealth seems most effective for improving A1C, systolic blood pressure, diabetes self-efficacy, and physical activity behaviors. Variability in



		outcome assessment and intervention heterogeneity were key challenges impeding comparisons across retained articles.
Phillips, A. S., & Guarnaccia, C. A. (2020). Self-determination theory and motivational interviewing interventions for type 2 diabetes prevention and treatment: A systematic review. <i>Journal of Health Psychology</i> , 25(1), 44-66.	42	Treatment of those with obesity, prediabetes, and type 2 diabetes often yields initial health improvements, but gains erode over time. A systematic search of self-determination theory and motivational interviewing papers for the above populations was conducted, yielding 54 publications and 42 independent samples. Interventions to treat overweight and obesity ( $n = 15$ ), prediabetes ( $n = 4$ ), and type 2 diabetes ( $n = 23$ ) are summarized and evaluated using the Quality Rating Scale. While the results of these studies are mixed, the majority of the interventions resulted in health benefits. Suggestions for future research are discussed.
Soderlund, P. D. (2018). Effectiveness of motivational interviewing for improving physical activity self-management for adults with type 2 diabetes: A review. <i>Chronic Illness</i> , 14(1), 54-68.	9	Findings suggest motivational interviewing sessions should target a minimal number of self-management behaviors, be delivered by counselors proficient in motivational interviewing, and use motivational interviewing protocols with an emphasis placed either on duration or frequency of sessions.
Song, D., Xu, T.-Z., & Sun, Q.-H. (2014). Effect of motivational interviewing on self-management in patients with type 2 diabetes mellitus: A meta-analysis <i>International Journal of Nursing Sciences</i> , 1(3), 291-297.	10	<b>Objective</b> The objective of this meta-analysis was to evaluate the effect of motivational interviewing (MI) on self-management in patients with type 2 diabetes. <b>Methods</b> Randomised controlled trials that assessed the effects of MI on self-management and HbA1c levels in patients with type 2 diabetes were systematically reviewed using multiple electronic databases. Weighted mean differences with 95% confidence intervals were calculated for continuous data. <b>Results</b> Ten trials were included in this meta-analysis. The self-management ability of patients with type 2 diabetes who underwent MI was significantly better than that of patients in the control group (WMD, 2.37; 95% CI, 1.77–2.98; $p < 0.00001$ ). Subgroup analysis showed that short-term MI ( $\leq 6$ months) resulted in a significant decrease in the HbA1c level ( $p < 0.05$ ) but that this advantage was not present for relatively long-term MI ( $> 6$ months) ( $p > 0.05$ ). <b>Conclusions</b> MI was associated with improved self-management abilities among patients with type 2 diabetes, and short-term MI ( $\leq 6$ months) effectively decreased the HbA1c level. The effect of long-term MI ( $> 6$ months) on the HbA1c level remains uncertain. Large-scale, higher-quality randomised controlled trials are needed to confirm the present findings.
Thepwongsa, I., Muthukumar, R., & Kessomboon, P. (2017). Motivational interviewing by general practitioners for Type 2 diabetes patients: A systematic review. <i>Family Practice</i> , 34(4), 376-383.	8	Eight out of 1882 studies met the criteria for inclusion. Six studies examined the effects of MI on Type 2 diabetes patient outcomes, only one of which examined its effects on GP outcomes. Two-thirds of the studies (4/6) found a significant improvement in at least one of the following patient outcomes: total cholesterol, low-density lipoproteins, fasting blood glucose, HbA1c, body mass index, blood pressure, waist circumference and physical activity. The effects of MI on GP outcomes yielded mixed results. Few studies have examined evidence for the effectiveness of MI delivered by GPs to Type 2 diabetes patients. Evidence to support the effectiveness of MI on GP and patient outcomes is weak. Further quality studies are needed to examine the effects of MI on GP and patient outcomes.
Winkley, K., Ismail, K., Landau, S., & Eisler, I. (2006). Psychological interventions to improve glycaemic control in patients with type 1 diabetes: systematic review and meta-analysis of randomised controlled trials. <i>BMJ</i> , 333(7558), 65.	29	29 trials were eligible for the systematic review and 21 trials for the meta-analysis. In the 10 studies of children and adolescents included in the meta-analysis, the mean percentage of glycated haemoglobin was significantly reduced in those who had received a psychological intervention compared with those in the control group (pooled standardised mean difference - 0.35 (95% confidence interval -0.66 to -0.04), equivalent to a 0.48% (0.05% to 0.91%)

		absolute reduction in glycated haemoglobin. In the 11 studies in adults the pooled standardised mean difference was -0.17 (-0.45 to 0.10), equivalent to 0.22% (-0.13% to 0.56%) absolute reduction in glycated haemoglobin. Psychological distress was significantly lower in the intervention groups in children and adolescents (pooled standardised effect size -0.46, -0.83 to -0.10) but not in adults (-0.25, -0.51 to 0.01). Psychological treatments can slightly improve glycaemic control in children and adolescents with diabetes but have no effect in adults.
	<b>Dietary Change</b>	
Hollis, J. L., Williams, L. T., Collins, C. E., & Morgan, P. J. (2013). Effectiveness of interventions using motivational interviewing for dietary and physical activity modification in adults: A systematic review. <i>JBIC Database of Systematic Reviews &amp; Implementation Reports</i> , 11(5), 1-27.	8	The search yielded 1,765 articles of which eight met all inclusion criteria. The review reported on a heterogeneous sample of studies that were of low-to-moderate quality. Five of the studies reported monitoring MI fidelity; however only three studies reported proficiency scores. Two of the five articles reporting on diet found positive effects. One study found a lower saturated fat score in the group that received MI by a dietician ( $\beta=0.23$ , $p<0.01$ ) compared with counseling by a dietician not trained in MI. The other study reported a significant difference in percent energy from fat (2.6%, $p<0.001$ ) favoring Motivational Interviewing when comparing Motivational Interviewing from a dietician versus standard care. None of the six articles reporting on physical activity found any difference between MI and the attention control. Conclusions: There is not yet sufficient evidence to conclude that MI enhances diet and physical activity behavior change above an attention control, although the findings from two studies are suggestive of a positive effect in decreasing dietary fat intake.
Stallings, D. T., & Schneider, J. K. (2018). Motivational interviewing and fat consumption in older adults: A meta-analysis. <i>Journal of Gerontological Nursing</i> , 44(11), 33-43.	6	Diets high in fat increase the risks for obesity and chronic diseases, even for older adults, the largest growing population in the United States. In the current study, a meta-analysis was performed to examine the effects of motivational interviewing (MI) dietary interventions on fat consumption in older adults. Electronic databases, journals, and unpublished literature were searched. Six primary studies were retrieved, providing seven comparisons between intervention and control groups and a total of 1,351 participants. MI had a moderate effect on fat intake in older adults (effect size = 0.354, $p < 0.01$ ). Studies with indicators of higher design quality showed greater MI effects. Nurses and providers can incorporate MI into health education and counseling to improve older adults' dietary health behaviors.
	<b>Eating Disorders</b>	
Macdonald, P., Hibbs, R., Corfield, F., & Treasure, J. (2012). The use of motivational interviewing in eating disorders: a systematic review. <i>Psychiatry Research</i> , 200(1), 1-11.	13	Thirteen studies were finally selected for inclusion. A wide range of participants, interventions and outcomes were measured which made comparative analysis difficult. Promising results were found for interventions that included MI, particularly with regards to its use in increasing a readiness and motivation to change. Consequently, there is potential for using MI in the field of eating disorders, particularly with respect to 'readiness for change'. More homogeneity in study design and delivery of MI is needed along with some markers of treatment fidelity, including information as to how adherence to the intervention is assured.
	<b>Education</b>	
Snape, L., & Atkinson, C. (2016). The evidence for student-focused motivational interviewing in educational settings: A review of the literature.	11	Eleven studies met the inclusion criteria, although just eight were classified as 'best evidence' and included in the final synthesis. Seven of the included studies yielded positive findings and one study was neutral. Although there are methodological weaknesses in existing literature on

<i>Advances in School Mental Health Promotion</i> , 9(2), 119-139.		student-focused SBMI, there is emerging evidence of its effectiveness for improving student outcomes in relation to academic achievement, behaviour and school-based motivation. Clear pointers for future research emerge from the review.
		<b>Gambling</b>
Cowlshaw, S., Merkouris, S., Dowling, N., Anderson, C., Jackson, A., & Thomas, S. (2012). Psychological therapies for pathological and problem gambling. <i>The Cochrane database of systematic reviews</i> , 11, CD008937.	4	Four studies of motivational interviewing therapy were identified and mainly considered samples demonstrating less severe gambling (relative to studies of pathological gamblers). Data suggested reduced financial loss from gambling following motivational interviewing therapy at 0 to 3 months post-treatment (SMD -0.41; 95% CI -0.75 to -0.07, n = 244), although comparisons on other outcomes were not significant. The effect approached zero when defined by gambling symptom severity (SMD -0.03; 95% CI -0.55 to 0.50, n = 163). Studies compared groups at 9 to 12 months follow-up and found a significant effect of motivational interviewing therapy in terms of frequency of gambling (SMD -0.53; 95% CI -1.04 to -0.02, n = 62), with comparisons on other outcomes that were not significant. Two studies of integrative therapies also considered samples demonstrating overall low gambling severity, and found no significant effects of therapy at 0 to 3 months post-treatment. Comparisons at 9 to 12 months follow-up suggested a medium effect from therapy in terms of gambling symptom severity, with no significant differences for other outcomes. There is preliminary evidence for some benefits from motivational interviewing therapy in terms of reduced gambling behaviour, although not necessarily other symptoms of pathological and problem gambling. However, the findings are based on few studies and additional research is needed to inform conclusions.
Yakovenko, I., Quigley, L., Hemmelgarn, B. R., Hodgins, D. C., & Ronksley, P. (2015). The efficacy of motivational interviewing for disordered gambling: Systematic review and meta-analysis. <i>Addictive Behaviors</i> , 43, 72-82.	8	Overall, 8 studies (N = 730) fulfilled the inclusion criteria for systematic review and 5 (N = 477) were included in the meta-analysis. Motivational interviewing was associated with significant reduction in gambling frequency up to a year after treatment delivery. For gambling expenditure, motivational interviewing yielded significant reductions in dollars spent gambling compared to non-motivational controls at post-treatment only (1–3 months). Overall, the results of this review suggest that motivational interviewing is an efficacious style of therapy for disordered gambling in the short term. Whether treatment effects are maintained over time remains unclear.
		<b>Health Screening</b>
Miller, S. J., Foran-Tuller, K., Ledergerber, J., & Jandorf, L. (2017). Motivational interviewing to improve health screening uptake: A systematic review. <i>Patient Education and Counseling</i> , 100(2), 190-198.	13	Of the 1573 abstracts, 13 met inclusion criteria. Of the 13 studies, 6 found MI more efficacious than a control, 2 found MI more efficacious than a weak control yet equivalent to an active control, and 3 found MI was not significantly better than a control. Two single arm studies reported improvements in health screening rates following an MI intervention. MI shows promise for improving health screening uptake. However, given the mixed results, the variability amongst the studies and the limited number of randomized trials, it is difficult to discern the exact impact of MI on health screening uptake.
		<b>Hypertension</b>
Conn, V. S., Ruppar, T. M., Chase, J. A., Enriquez, M., & Cooper, P. S. (2015). Interventions to improve	101	The most promising intervention components were those linking adherence behavior with habits, giving adherence feedback to patients, self-monitoring of blood pressure, using pill

medication adherence in hypertensive patients: Systematic review and meta-analysis. <i>Current Hypertension Reports</i> , 17(12), 94.		boxes and other special packaging, and motivational interviewing. The most effective interventions employed multiple components and were delivered over many days. Future research should strive for minimizing risks of bias common in this literature, especially avoiding self-report adherence measures.
Ren, Y., Yang, H., Browning, C., Thomas, S., & Liu, M. (2014). Therapeutic effects of motivational interviewing on blood pressure control: A meta-analysis of randomized controlled trials <i>International Journal of Cardiology</i> , 172(2), 509-511.	7	Pooled analysis demonstrated that MI had a significant effect on systolic blood pressure (SBP) both after intervention and post-intervention follow-ups ( $Z = 3.81$ , $p = 0.0001$ ; $-2.61$ mm Hg [ $-3.96, -1.27$ ]) and SBP follow-up ( $Z = 2.90$ , $p = 0.004$ ; $-1.64$ mm Hg [ $-2.75, -0.53$ ]). However MI had a slight effect on diastolic blood pressure (DBP) ( $Z = 2.10$ , $p = 0.04$ ; $-0.90$ mm Hg [ $-1.75, -0.06$ ]) after intervention; If we add the follow-up data into statistic there was no statistic difference on DBP ( $Z = 1.70$ , $p = 0.09$ ; $-0.58$ mm Hg [ $-1.25, 0.09$ ]). There was substantial heterogeneity present across the included studies: $\chi^2 = 4.46$ , $df = 6$ ( $p = 0.61$ ); $I^2 = 0\%$ and $\chi^2 = 16.56$ , $df = 11$ ( $p = 0.12$ ); $I^2 = 34\%$ for SBP and follow-up; $\chi^2 = 1.54$ , $df = 6$ ( $p = 0.96$ ); $I^2 = 0\%$ and $\chi^2 = 4.12$ , $df = 11$ ( $p = 0.97$ ); $I^2 = 0\%$ for DBP and follow-up. The results are illustrated in Figs. 1 (a, b) and 2 (a, b). Risk of bias assessment found that nearly all study assessment resulted from moderate to low. Based on the meta-analysis, we confirmed that MI is an effective psychological approach to control the SBP through behaviour change both after intervention and post-intervention follow-ups. However the effects on DBP need additional verification.
<b>Infection Control / HIV / AIDS / Sexual Risk</b>		
Berg, R. C., Ross, M. W., & Tikkanen, R. (2011). The effectiveness of MI4MSM: how useful is motivational interviewing as an HIV risk prevention program for men who have sex with men? A systematic review. <i>AIDS education and prevention : official publication of the International Society for AIDS Education</i> , 23(6), 533-549.	10	Among men who have sex with men (MSM), the principal risk practice for HIV infection is unprotected anal intercourse, often engaged in under the influence of alcohol and other substances. Both behaviors are targeted through the much-used counseling approach motivational interviewing (MI). We conducted a systematic review of the effectiveness of behavioral interventions adapting the principles and techniques of MI on HIV risk behaviors for MSM. Ten randomized controlled trials, which included 6,051 participants at baseline, were eligible for inclusion. Nine outcomes, of which seven were for sexual behavior outcomes, were sufficiently similar to compute meta-analyses. With the exception of one outcome, drinks per day at short-term follow-up, there were no significant differences between the groups receiving MI and the control groups. The effectiveness of MI as a prevention strategy for HIV risk behaviors among MSM is uncertain and continued work to craft more effective HIV prevention programming for this group should be done.
Dillard, P. K., Zuniga, J. A., & Holstad, M. M. (2016). An integrative review of the efficacy of motivational interviewing in HIV management. <i>Patient Education and Counseling</i> .	19	Of 239 articles identified initially, 19 met our criteria for synthesis. These studies were conducted throughout the world, including the U.S., Thailand, and South Africa. In general, studies that used MI, either alone or in conjunction with other interventions, reported improved adherence, decreased depression, and decreased risky sexual behaviors. This review demonstrates a positive relationship between MI-based interventions and behavioral change, which may lead to improved health outcomes in PLWH. PRACTICE IMPLICATIONS: Motivational interviewing can be an effective method of therapeutic communication for PLWH, who struggle with adherence, depression, and risky sexual behaviors.
Hill, S., & Kavookjian, J. (2012). Motivational interviewing as a behavioral intervention to increase HAART adherence in patients who are HIV-positive: a	5	Researchers conducted a review of the literature to identify studies analyzing the effect of a MI intervention on HAART adherence, with the objectives of examining this relationship and identifying gaps in the literature. To draw definitive conclusions about these questions and to

systematic review of the literature. <i>AIDS care</i> , 24(5), 583-592.		maintain high methodological quality in the search, researchers used the Cochrane method for systematic reviews while conducting this review. Five studies were retained for review from the search and all were RCTs. Sample sizes ranged from 141 to 326 patients. Three of the five studies showed a significant increase in adherence rates, two studies reported a significant decrease in viral load, and one study showed an increase in CD4 cell count as a result of the intervention. A lack of a universally accepted definition of adherence and large gaps in the areas of humanistic and economic outcomes in the literature creates challenges in comparing improvements in HAART adherence across studies. Despite these challenges in comparison, MI appears to be a promising intervention to improve HAART adherence in HIV-positive individuals, but further studies of rigorous methodological quality are needed to fully understand the effect of this intervention.
Mbuagbaw, L., Ye, C., & Thabane, L. (2012). Motivational interviewing for improving outcomes in youth living with HIV. <i>Cochrane Database of Systematic Reviews</i> (9).	2	Two trials located in the United States, reported in four papers met our inclusion criteria. They enrolled a total of 237 participants and compared motivational interviewing singly to standard of care. None of these trials reported on adherence to HIV medication, mortality or quality of life. Both trials reported reductions in viral load (in the short term) and unprotected sexual acts. A reduction in alcohol use was identified only in one of two studies that reported on this outcome. One trial reported on retention. Retention rates were not affected by the intervention. There is moderate quality evidence, coming from two trials which suggests that MI is effective in reducing short term viral load and unprotected sexual acts. There is moderate quality evidence from one trial that MI is effective in reducing alcohol use. There is a need for more trials which report on outcomes such as adherence to medication, mortality and quality of life in youth.
Naar-King, S., Parsons, J. T., & Johnson, A. M. (2012). Motivational interviewing targeting risk reduction for people with HIV: A systematic review. <i>Current HIV/AIDS Reports</i> , 9(4), 335-343.	12	To identify the efficacy of MI in relation to sexual risk and substance use, we conducted a systematic review of research literature published before May 2012, which focused on treatment fidelity, study design, and findings. All six full-scale clinical trials showed significant effects on components of sexual risk behavior regardless of using MI alone or MI in combination with CBT. Results suggest that MI has the potential to reduce sexual risk behavior, but the effects on reducing substance use were less consistent. We identify opportunities for future research with HIV-positive individuals, including the development of interventions assessing the effects of MI on illicit drug use, utilizing higher fidelity standards in intervention implementation and studies of transportability and cost-effectiveness.
Rodrigues, C., Ward, S., & Trovão, N. (2019). Motivational interviewing for sexual health risky behaviors. <i>Journal of Sexual Medicine</i> , 16(4, Supplement 1), S5.	3	
Wray, T. B., Grin, B., Dorfman, L., Glynn, T. R., Kahler, C. W., Marshall, B. D. L., . . . Operario, D. (2016). Systematic review of interventions to reduce problematic alcohol use in men who have sex with men. <i>Drug and Alcohol Review</i> , 35(2), 148-157.	5	The methodological quality of studies varied, and meta-analysis was not conducted because of heterogeneity in intervention approaches and outcomes. Studies provided preliminary support for the use of motivational interviewing/motivational enhancement-based interventions (MI) and hybrid MI and cognitive behavioural therapy treatments for heavy drinking among MSM over no treatment. Perhaps the most important conclusion of this review, however, is that well-designed, theoretically informed research focused on establishing the efficacy of interventions for hazardous drinking and alcohol use disorders among MSM is alarmingly

		scarce. Effective interventions to reduce hazardous drinking among MSM and prevent key alcohol-related outcomes, including risk for HIV transmission and health problems among HIV-positive MSM, are needed to mitigate health disparities in this population.
		<b>Inflammatory Bowel Syndrome</b>
Wagoner, S. T., & Kavookjian, J. (2017). The influence of motivational interviewing on patients with inflammatory bowel disease: A systematic review of the literature. <i>Journal of Clinical Medicine Research</i> , 9(8), 659-666.	4	Results suggest that MI can be effective in improving outcomes for individuals with IBD since patients experienced improved adherence rates, displayed greater advice-seeking behavior, and perceived providers as having more empathy and better communication skills. Further research is required since the pool of retained studies is small, evidencing a paucity of literature focusing on this evidence-based health behavior intervention for the behaviors needed to optimally manage IBD. Further, only adults were examined in these studies, so generalizations to children and adolescents are limited.
		<b>Learning Motivational Interviewing</b>
Dunhill, D., Schmidt, S., & Klein, R. (2014). Motivational interviewing interventions in graduate medical education: A systematic review of the evidence. <i>Journal of Graduate Medical Education</i> , 6(2), 222-236.	9	Of the 9 studies of MI education in graduate medical education training, most noted favorable outcomes after MI education. Outcomes included improvements in residents' view of MI, MI skill use and competency, and resident satisfaction with MI interventions. Of the 5 studies that looked at residents' views of MI, 3 found improvements in resident assessments of the importance of and confidence in using MI. Of the 4 studies of MI skills, 3 reported improvements in residents' use of and competency in the MI skill. The quality of MI education in the graduate medical education literature is limited by overreliance on preintervention and postintervention analysis as a study design, the variable intensity of educational interventions, and limited use of validated assessment tools and quantitative outcome measures. Conclusions Review of the literature shows that MI education can be successfully implemented within the residency education environment. The intensity of MI interventions, coupled with experiential learning and feedback, correlated with favorable outcomes in terms of resident use of MI skills and resident satisfaction. Further study is needed to determine which MI skills are most effectively taught to residents, the impact of MI training on resident behavior in clinical settings, and the impact on clinical outcomes.
Keeley, R., Engel, M., Reed, A., Brody, D., & Burke, B. L. (2018). Toward an emerging role for motivational interviewing in primary care. <i>Psychiatry in Primary Care</i> , 20(41).	3	This review describes how recent research findings addressing the knowledge gaps support a growing role for MI in primary care. Recent Findings: Two trials of MI training combined classroom time with ongoing coaching and feedback, resulting in enhanced MI ability relative to a control arm where PCPs received minimal or no MI training. A third MI training trial excluded coaching and feedback, failing to increase use of MI. Adding to a growing list of behavioral health-related problems for which MI training has shown some effectiveness, a trial of training PCPs to use MI with depressed patients was associated with significantly improved depressive symptoms. Moreover, aspects of the PCPs' MI-related language and patients' arguments for positive behavior changes, "change talk," appeared to explain the positive effects of MI training on depression outcome. Summary MI-training approaches have improved such that PCPs and possibly other clinic staff may want to consider MI training as a way to more effectively support their patients as they address behavioral health-related problems (e.g., tobacco use). MI training should focus on eliciting "change talk" from patients.



Medication Adherence		
Conn, V. S., Ruppar, T. M., Chase, J. A., Enriquez, M., & Cooper, P. S. (2015). Interventions to improve medication adherence in hypertensive patients: Systematic review and meta-analysis. <i>Current Hypertension Reports</i> , 17(12), 94.	101	The most promising intervention components were those linking adherence behavior with habits, giving adherence feedback to patients, self-monitoring of blood pressure, using pill boxes and other special packaging, and motivational interviewing. The most effective interventions employed multiple components and were delivered over many days. Future research should strive for minimizing risks of bias common in this literature, especially avoiding self-report adherence measures.
Drymalski, W. M., & Campbell, T. C. (2009). A review of motivational interviewing to enhance adherence to antipsychotic medication in patients with schizophrenia: Evidence and recommendations. <i>Journal of Mental Health</i> , 18, 6-15.	5	The literature review produced only five empirical studies which utilized MI to increase antipsychotic adherence. Two studies found an increase in antipsychotic adherence following the MI-based intervention, while the other three found no change in adherence. The small sample of studies and the methodological limitations of each made it difficult to draw any meaningful conclusions. Suggestions to address these methodological issues in future research are provided.
Easthall, C., Song, F., & Bhattacharya, D. (2013). A meta-analysis of cognitive-based behaviour change techniques as interventions to improve medication adherence. <i>BMJ Open</i> , 3(8).	26	Interventions most commonly used MI, but many used techniques such as aiming to increase the patient's confidence and sense of self-efficacy, encouraging support-seeking behaviours and challenging negative thoughts, which were not specifically categorised. Cognitive-based behaviour change techniques are effective interventions eliciting improvements in medication adherence that are likely to be greater than the behavioural and educational interventions largely used in current practice. Subgroup analyses suggest that these interventions are amenable to use across different populations and in differing manners without loss of efficacy. These factors may facilitate incorporation of these techniques into routine care.
Freije, F., & Hedegaard, U. (2022). Motivational interviewing in clinical pharmacist interventions: A systematic review of randomised controlled trials. <i>European Journal of Hospital Pharmacy</i> , 29(Suppl 1), A53. <a href="https://doi.org/10.1136/ejhpharm-2022-eahp.112">https://doi.org/10.1136/ejhpharm-2022-eahp.112</a>	8	Four of eight studies showed a statistically significant effect on primary outcomes like medication adherence, hospital readmissions, and emergency department visits. Beneficial effects of MI were found in some clinical pharmacist interventions. These interventions could have a positive impact on medication adherence and other health outcomes.
Palacio, A., Garay, D., Langer, B., Taylor, J., Wood, B. A., & Tamkariz, L. (2016). Motivational interviewing improves medication adherence: A systematic review and meta-analysis. <i>Journal of General Internal Medicine</i> , 31(8), 929-940.	17	The main outcome was medication adherence defined as any subjective or objective measure reported as the proportion of subjects with adequate adherence or mean adherence and standard deviation. For categorical variables we calculated the relative risk (RR) of medication adherence, and for continuous variables we calculated the standardized mean difference (SMD) between the MI and control groups. We included 17 RCTs. Ten targeted adherence to HAART. For studies reporting a categorical measure (n = 11), the pooled RR for medication adherence was higher for MI compared with control (1.17; 95 % CI 1.05- 1.31; p < 0.01). For studies reporting a continuous measure (n = 11), the pooled SMD for medication adherence was positive (0.70; 95 % CI 0.15-1.25; p < 0.01) for MI compared with control. The characteristics that were significantly (p < 0.05) associated with medication adherence were telephonic MI and fidelity-based feedback among studies reporting categorical measures, group MI and fidelity assessment among studies reporting continuous measures and delivery by nurses or research assistants. Effect sizes differed in magnitude, creating high heterogeneity. MI improves medication adherence at different exposure times and counselors' educational level. However, the evaluation of MI characteristics associated with success had inconsistent results. Larger studies targeting diverse populations with a variety of chronic



		conditions are needed to clarify the effect of different MI delivery modes, fidelity assessment and provision of fidelity based-feedback.
Spoelstra, S. L., Schueller, M., Hilton, M., & Ridenour, K. (2015). Interventions combining motivational interviewing and cognitive behaviour to promote medication adherence: A literature review <i>Journal of Clinical Nursing</i> , 24(9-10), 1163-1173.	6	Six articles met the inclusion criteria. A randomised controlled trial reported pretreatment missed doses of 5.58 and post-treatment of 0.92 and trended towards significance. Four cohort studies had effect sizes of 0.19–0.35 ( $p < 0.05$ ). A case study had a pretreatment adherence rate of 25% and post-treatment 77% ( $p < 0.01$ ). Although there were a limited number of studies on combined motivational interviewing and cognitive behavioural interventions, five out of six were effective at improving medication adherence. Future studies with large rigorous randomised trials are needed.
Teeter, B. S., & Kavookjian, J. (2014). Telephone-based motivational interviewing for medication adherence: A systematic review. <i>Translational Behavioral Medicine</i> , 4(4), 372-381.	9	A total of nine articles were retained for review. The quality of the studies and the interventions varied significantly, which precluded making definitive conclusions but findings among a majority of retained studies suggest that telephone-based MI may help improve medication adherence. The included studies provided promising results and justification for continued exploration in the provision of MI via telephone encounters. Future research is needed to address gaps in the current literature but the results suggest that MI may be an efficient option for healthcare professionals seeking an evidence-based method to reach remote or inaccessible patients to help them improve their medication adherence.
Zomahoun, H. T., Guenette, L., Gregoire, J. P., Lauzier, S., Lawani, A. M., Ferdynus, C., . . . Moisan, J. (2016). Effectiveness of motivational interviewing interventions on medication adherence in adults with chronic diseases: A systematic review and meta-analysis. <i>International Journal of Epidemiology</i> , 46(2), 589-602.	19	Nineteen RCTs were identified, and 16 were included in the meta-analysis. The pooled MI intervention effect size was 0.12 [95% confidence interval (CI) = (0.05, 0.20), $I^2 = 1\%$ ]. Interventions that were based on MI only [ $\beta = 0.183$ , 95% CI = (0.004, 0.362)] or those in which interventionists were coached during intervention implementation [ $\beta = 0.465$ , 95% CI = (0.028, 0.902)] were the most effective. MI interventions that were delivered solely face to face were more effective than those that were delivered solely by phone [ $\beta = 0.270$ , 95% CI = (0.041, 0.498)]. This synthesis of RCTs suggests that MI interventions might be effective at enhancing of medication adherence in adults treated for chronic diseases. Further research is however warranted, as the observed intervention effect size was small.
<b>Mental Health</b>		
Cleary, M., Hunt, G., Matheson, S., Siegfried, N., & Walter, G. (2008). Psychosocial interventions for people with both severe mental illness and substance misuse. <i>The Cochrane database of systematic reviews</i> (1), CD001088.	4	Evaluation of long-term integrated care included 4 RCTs (total $n=735$ ). We found no significant difference on measures of substance use ( $n=85$ , 1 RCT, RR 0.89 CI 0.6 to 1.3) or loss to treatment ( $n=603$ , 3 RCTs, RR 1.09 CI 0.8 to 1.5). For the non-integrated intensive case management trials (4 RCTs, total $n=151$ ) we also found no significant difference for loss ( $n=134$ , 3 RCTs, RR 1.35 CI 0.8 to 2.2). Motivational interviewing plus cognitive behavioural therapy (3 RCTs, total $n=276$ ) did not reveal any advantage for retaining participants ( $n=36$ , 1 RCT, RR lost to treatment 0.50 CI 0.1 to 5.0) or for relapse ( $n=36$ , 1 RCT, RR 0.58 CI 0.3 to 1.1), and no benefit for reducing substance use ( $n=119$ , 1 RCT, RR 0.19 CI -0.2 to 0.6). Cognitive behavioural therapy alone (4 trials, total $n=260$ ) showed fewer participants lost from treatment ( $n=260$ , 4 RCTs, $p=0.02$ , RR 0.61 CI 0.4 to 0.9). No benefits were observed on measures of lessening cannabis use ( $n=47$ , 1 RCT, RR 1.30 CI 0.8 to 2.2) or on the number of participants using substances (alcohol; $n=46$ , 1 RCT, RR 5.88 CI 0.8 to 44.0, drugs; $n=46$ , 1 RCT, RR 2.02 CI 0.9 to 4.8) and no differences were observed on measures of mental state ( $n=105$ , 1 RCT, RR 0.52 CI -0.8 to 1.8). We found no advantage for motivational interviewing alone (5 trials, total $n=338$ ) in reducing 'lost to evaluation' ( $n=338$ , 5 RCTs, RR 0.96 CI 0.6 to

		1.5) compared with treatment as usual, although significantly more participants in the motivational interviewing group reported for their first aftercare appointment (n=93, 1 RCT, RR 0.69 CI 0.5 to 0.9, NNT 4 CI 3 to 12). Some differences were observed in abstaining from alcohol favouring treatment (n=28, 1 RCT, RR 0.36 CI 0.2 to 0.8, NNT 2 CI 2 to 5), but not other substances (n=89, 1 RCT, RR -0.07 CI -0.6 to 0.4) and no differences were observed in mental state (n=30, 1 RCT, WMD -4.20 CI -18.7 to 10.3). Finally, we found no significant differences for skills training in the numbers lost to treatment by 12 months (n=94, 2 RCTs, RR 0.70 CI 0.4 to 1.1). We included 25 RCTs and found no compelling evidence to support any one psychosocial treatment over another to reduce substance use (or improve mental state) by people with serious mental illnesses. Furthermore, methodological difficulties exist which hinder pooling and interpreting results; high drop out rates, varying fidelity of interventions, varying outcome measures, settings and samples and comparison groups may have received higher levels of treatment than standard care. Further studies are required which address these concerns and improve the evidence in this important area.
Hunt, G. E., Siegfried, N., Morley, K., Sitharthan, T., & Cleary, M. (2013). Psychosocial interventions for people with both severe mental illness and substance misuse. <i>The Cochrane database of systematic reviews</i> , 10, CD001088.	8	We found no advantage for motivational interviewing alone compared with usual treatment (8 RCTs, n = 509) in reducing losses to treatment at 6 months (n = 62, 1 RCT, RR 1.71 CI 0.63 to 4.64, very low quality of evidence), although significantly more participants in the motivational interviewing group reported for their first aftercare appointment.
Lawrence, P., Fulbrook, P., Somerset, S., & Schulz, P. (2017). Motivational interviewing to enhance treatment attendance in mental health settings: A systematic review and meta-analysis. <i>Journal of Psychiatric and Mental Health Nursing</i> , 24(9-10), 699-718.	14	Meta-analysis revealed that MI pre-treatment improved attendance relative to comparison groups. Individuals not seeking treatment for mental health issues benefited the most from MI. Despite differences in MI treatment intensity, short interventions were as effective as longer interventions, whereas two MI sessions for as little as 15 min were effective in enhancing treatment attendance.
Osborn, L. D. (2006). <i>A meta -analysis of controlled clinical trials of the efficacy of motivational interviewing in a dual -diagnosis population</i> . Psy.D. Dissertation, Wright Institute, Berkeley, CA.	7	A meta-analysis was conducted on seven controlled clinical trials investigating the efficacy of Motivational Interviewing on dually-diagnosed patients. Efficacy was defined differently in the studies: some were compliance with treatment (e.g. session attendance) whereas others were abstinence or reduction in drug use. Contrary to the author's hypothesis, the results did not support the efficacy of Motivational Interviewing in dually-diagnosed participants.
Romain, A., Bernard, P., Akkrass, Z., St-Amour, S., Lachance, J.-P., Hains-Monfette, G., Atoui, S., Kingsbury, C., Dubois, E., Karelis, A., & Abdel-Baki, A. (2020). Motivational theory-based interventions on health of people with severe mental illness: A systematic review and meta-analysis. <i>Schizophrenia Research</i> , 222, 31-41.	14	Motivational theory-based interventions were effective in increasing PA (g = 0.27, 95%CI[0.03; 0.51], p = .003), reducing weight (WMD = -1.87 kg, 95%CI[-2.98; -0.76], p = .001), body mass index (WMD = -0.82 kg/m <sup>2</sup> , 95%CI[-1.23; -0.41], p = .009), waist circumference (WMD = -1.91 cm, 95%CI[-3.63; -0.18], p = .03) and fasting glucose (g = -0.17, 95%CI[-0.34; -0.001], p = .04). Larger effect sizes were found in interventions based on only one theoretical model of motivation. In conclusion, interventions using motivational theories are effective to improve PA levels and the cardiometabolic health profile of people with severe mental illness.
Vanderwall, F. M. (2015). Impact of motivational interviewing on medication adherence in schizophrenia. <i>Issues in Mental Health Nursing</i> , 36(11), 900-904.	6	Relevant studies from the last ten years were included, resulting in six studies being included in this literature review. One study presented evidence for a direct relationship between motivational interviewing and medication adherence. Most studies did not support this

		relationship. Some studies found evidence for a relationship between motivational interviewing and other outcomes such as improved psychotic symptoms and decreased re-hospitalization rates. Motivational interviewing may be beneficial for some patients with schizophrenia but should not be considered a first line therapy. Clinicians not already using motivational interviewing in providing care to their patients with schizophrenia should not implement it for this population.
Wong-Anuchit, C., Chantamit-o-pas, C., Schneider, J. K., & Mills, A. C. (2019). Motivational interviewing–based compliance/adherence therapy interventions to improve psychiatric symptoms of people with severe mental illness: Meta-analysis. <i>Journal of the American Psychiatric Nurses Association</i> , 25(2), 122-133.	16	<b>BACKGROUND:</b> Nonadherence is the leading cause of relapse in mental illness. No quantitative synthesis of multiple studies has been conducted to determine the effect of motivational interviewing (MI)–based compliance/adherence therapy (CAT) interventions on people with severe mental illness. <b>OBJECTIVE:</b> To synthesize the studies that examined the effectiveness of MI-based CAT interventions to improve psychiatric symptoms. <b>DESIGN:</b> Quantitative meta-analysis. <b>RESULTS:</b> Sixteen primary studies were retrieved ( $N=1267$ participants). MI-based CAT interventions significantly improved psychiatric symptoms with a moderate effect size (ES) of .45. Longer sessions and higher intervention doses showed significantly greater ESs than shorter sessions and lower doses. ESs were significantly lower when participants were older and when there was a longer period between the intervention and outcome measurement. <b>CONCLUSIONS:</b> These findings support the effectiveness of MI-based CAT interventions. Session length and dose effect should be considered when tailoring MI to clients.
<b>Multiple Sclerosis</b>		
Dorstyn, D. S., Mathias, J. L., Bombardier, C. H., & Osborn, A. J. (2020). Motivational interviewing to promote health outcomes and behaviour change in multiple sclerosis: A systematic review. <i>Clinical Rehabilitation</i> , 34(3), 299-309.	10	Ten randomised controlled trials, involving a pooled sample of 987 adults with relapsing–remitting or progressive multiple sclerosis and mild to moderate impairment, were identified. Most trials had a low or unclear risk of methodological bias. Motivational interviewing, when used in conjunction with other counselling or rehabilitation techniques, resulted in significant immediate medium-to-very large improvements in multiple physical, psychological, social and behavioural outcomes (range: $g = .34–2.68$ ). Maintenance effects were promising (range: $g = .41–1.11$ ), although less frequently assessed ( $N_{studies} = 5$ ) and of limited duration (1–7 months). Individual and group-based interventions, delivered in-person or by telephone, were all effective.
<b>Obesity / Overweight / Weight Loss</b>		
Amiri, P., Mansouri-Tehrani, M. M., Khalili-Chelik, A., Karimi, M., Jalali-Farahani, S., Amouzegar, A., & Kazemian, E. (2021 in press). Does motivational interviewing improve the weight management process in adolescents? A systematic review and meta-analysis. <i>International Journal of Behavioral Medicine</i> . <a href="https://doi.org/10.1007/s12529-021-09994-w">https://doi.org/10.1007/s12529-021-09994-w</a>	18	MI-based interventions did not affect on all primary outcomes, including BMI, BMI Z-score, waist circumference, and fat percentage; however, in terms of secondary outcomes, only sugary beverage intake was reduced in adolescents ( $SMD = -0.47$ , $K = 3$ , $I^2 = 26.2\%$ ). Physical activity and cognitive variables were not considered in the current analysis due to limited data and high heterogeneity in measurements and reports. In addition, findings of sensitivity results showed that MI could significantly reduce waist circumference among adolescents ( $SMD = -0.51$ , 95% CI -0.91 to -0.11). In terms of subgroup analysis, our results showed that various characteristics of participants (age, sex, weight status) and interventions (parental involvement, study duration, fidelity assessment, type of the control groups) could affect related primary and secondary outcomes among adolescents.

Armstrong, M. J., Mottershead, R. A., Ronksley, P. E., Sigal, R. J., Campbell, T. S., & Hemmelgarn, B. R. (2011). Motivational interviewing to improve weight loss in overweight and/or obese patients: A systematic review and meta-analysis of randomized clinical trials. <i>Obesity Reviews</i> , 12(9), 709-723.	12	Motivational interviewing was associated with a greater reduction in body mass compared to controls (SMD = -0.51 [95% CI -1.04, 0.01]). There was a significant reduction in body weight (kg) for those in the intervention group compared with those in the control group (WMD = -1.47 kg [95% CI -2.05, -0.88]). For the BMI outcome, the WMD was -0.25 kg m <sup>-2</sup> (95% CI -0.50, 0.01). Motivational interviewing appears to enhance weight loss in overweight and obese patients.
Barnes, R. D., & Ivezaj, V. (2015). A systematic review of motivational interviewing for weight loss among adults in primary care. <i>Obesity Reviews</i> , 16(4), 304-318.	24	A total of 24 adult randomized controlled trials were identified. MI interventions typically were provided individually by a range of clinicians and compared with usual care. Few studies provided adequate information regarding MI treatment fidelity. Nine studies (37.5%) reported significant weight loss at post-treatment assessment for the MI condition compared with control groups. Thirteen studies (54.2%) reported MI patients achieving at least 5% loss of initial body weight. There is potential for MI to help primary care patients lose weight. Conclusions, however, must be drawn cautiously as more than half of the reviewed studies showed no significant weight loss compared with usual care and few reported MI treatment fidelity.
Barrett, S., Begg, S., O'Halloran, P., & Kingsley, M. (2018). Integrated motivational interviewing and cognitive behaviour therapy for lifestyle mediators of overweight and obesity in community-dwelling adults: A systematic review and meta-analyses. <i>BMC Public Health</i> , 18(1160).	10	Ten randomised controlled trials involving 1949 participants were included. Results revealed moderate quality evidence that integrated motivational interviewing and cognitive behaviour therapy had a significant effect in increasing physical activity levels in community-dwelling adults (SMD: 0.18, 95% CI: 0.06 to 0.31, $p < 0.05$ ). The combined intervention resulted in a small, non-significant effect in body composition changes (SMD: -0.12, 95% CI: -0.24 to 0.01, $p = 0.07$ ). Insufficient evidence existed for outcome measures relating to dietary change. The addition of integrated motivational interviewing and cognitive behaviour therapy to usual care can lead to modest improvements in physical activity and body composition for community-dwelling adults. The available evidence demonstrates that it is feasible to integrate MI with CBT and that this combined intervention has the potential to improve health-related outcomes. <b>Conclusion</b> This review details recommendations for future research including the adoption of uniform objective outcome measures and well-defined interventions with sufficient follow-up durations and assessments of treatment fidelity.
Borrello, M., Pietrabissa, G., Ceccarini, M., Manzoni, G. M., & Castelnovo, G. (2015). Motivational interviewing in childhood obesity treatment. <i>Frontiers in Psychology</i> (DOI: 10.3389/fpsyg.2015.01732 ).	6	Obesity is one of today's most diffused and severe public health problems worldwide. It affects both adults and children with critical physical, social, and psychological consequences. The aim of this review is to appraise the studies that investigated the effects of motivational interviewing techniques in treating overweight and obese children. The electronic databases PubMed and PsychINFO were searched for articles meeting inclusion criteria. The review included studies based on the application of motivational interviewing (MI) components and having the objective of changing body mass index (BMI) in overweight or obese children from age 2 to age 11. Six articles have been selected and included in this review. Three studies reported that MI had a statistically significant positive effect on BMI and on secondary obesity-related behavior outcomes. MI can be applicable in the treatment of overweight and obese children, but its efficacy cannot be proved given the lack of studies carried out on this specific sample.

Burgess, E., Hassmen, P., Welvaert, M., & Pumpa, K. L. (2017). Behavioural treatment strategies improve adherence to lifestyle intervention programmes in adults with obesity: A systematic review and meta-analysis <i>Clinical Obesity</i> , 7(2), 105-114.	9	Poor adherence to lifestyle intervention remains a key factor hindering treatment effectiveness and health outcomes for adults with obesity. The aim of this systematic review and meta-analysis is to determine if behavioural treatment strategies (e.g. goal setting, motivational interviewing, relapse prevention, cognitive restructuring etc.) improve adherence to lifestyle intervention programmes in adults with obesity. Randomized controlled trials that investigated the use of behavioural treatment strategies in obesity management were identified by systematically reviewing the literature within Medline, PsycINFO, CINAHL, SPORTDiscus and Web of Science from their inception to August 2016. This meta-analysis shows that behavioural treatment interventions have a significant positive effect on session attendance (percentage) and physical activity (total min/week) in adults with obesity ( $M = 17.63$ (95% confidence interval (CI) = 10.77, 24.50), $z = 5.0337$ , $P < 0.0001$ and $M = 105.98$ (95% CI = 58.64, 153.32), $z = 4.3878$ , $P < 0.0001$ , respectively). This meta-analysis of randomized controlled trials provides evidence that behavioural treatment strategies improve adherence to lifestyle intervention programmes in adults with obesity. These strategies should be routinely incorporated into lifestyle intervention, obesity management and weight loss programmes with the aim of improving engagement and adherence. If adherence were improved, treatment effectiveness, health outcomes and the ultimate burden of chronic disease could also be improved.
DiRosa, L. C. (2010). Motivational interviewing to treat overweight/obesity: A meta-analysis of relevant research. Ed.D. Dissertation, Wilmington University, New Castle DE.	41	There were 41 trials that analyzed the effectiveness of motivational interviewing in changing diet, physical activity, and body weight included in this meta-analysis. In terms of overall effectiveness, there was a moderate effect of motivational interviewing on all outcomes ( $d = 0.29$ ) with a success rate of 57%. Motivational interviewing was most effective in changing dietary behavior ( $d = 0.35$ ). There were significant moderator effects of gender, socioeconomic status, ethnicity and practitioner on dietary intake outcomes but not physical activity or weight outcomes, indicating that motivational interviewing is more effective for females, middle/mixed socioeconomic status, Caucasians and trained practitioners. From the results of this study, it can be concluded that motivational interviewing has the potential to be an effective treatment for obesity.
Espinoza, P. G., San Carlos, N. G., Rojas, D. N., & Rioseco, R. C. (2019). Is the individual motivational interviewing effective in overweight and obesity treatment? A systematic review. <i>Atención Primaria</i> 51(9), 548-561.	11	Individual MI interventions have a modest effect on the variation of bodyweight, and could have a positive impact on behavioral, psychosocial, and other variables. More studies are needed to elucidate the best form of MI application with regard to effectiveness on different variables. The primary healthcare system is in an advantageous position for generating fruitful research on this motivational strategy.
Kao, T. A., Ling, J., Hawn, R., & Vu, C. (2021). The effects of motivational interviewing on children's body mass index and fat distributions: A systematic review and meta-analysis. <i>Obesity Reviews</i> (e13308).	33	We performed random-effects models and exploratory moderation analyses with mixed-effects models. The pooled effect size of MI was $-0.18$ ( $p = 0.002$ ) on BMI, $-0.65$ ( $p < 0.001$ ) on WC, and $-0.44$ ( $p = 0.005$ ) on children's BF%. The relationship between MI and BMI changes was significantly moderated by the types of intervener ( $Q = 9.71$ , $p = 0.021$ ) and the existence of supplemental intervention activities ( $Q = 9.21$ , $p = 0.002$ ). Other potential moderators included children's age, weight status, intervention setting, and targeted behaviors (eating and/or physical activity). Our findings support the effectiveness of MI interventions on improving children's anthropometric outcomes (i.e., BMI, WC, and BF%).

Makin, H., Chisholm, A., Fallon, V., & Goodwin, L. (2021). Use of motivational interviewing in behavioural interventions among adults with obesity: A systematic review and meta-analysis. <i>Clinical Obesity</i> 11(4), e12457.	12	Meta-analysis of 12 studies indicated no overall pooled effect on bodyweight and BMI outcomes between intervention and control groups (SMD = 0.01 [95%CI 0.13 to 0.12, P = .93]). Findings were limited by multiple sources accounting for risk of bias, and poor reporting of intervention fidelity and content. Intervention and control content descriptions indicated similar techniques, with social support, goal setting (behaviour) and self-monitoring of behaviour occurring most frequently across both. Findings do not contribute additional evidence for MI use in this context, however methodological limitations were identified which must be resolved to better identify the intervention effects on obesity-related outcomes.
Michalopoulou, M., Ferrey, A., Harmer, G., Goddard, L., & Kebbe, M. (2022 in press). The effectiveness of motivational interviewing in managing overweight and obesity: A systematic review and meta-analysis. <i>Annals of Internal Medicine</i> .	46	Conclusions: There is no evidence that MI adds to the effectiveness of behavioral weight management programs or improves weight loss in people being treated for weight-related non-communicable diseases. Given the intensive training required for its delivery, this evidence suggests MI may not be a worthwhile addition to BWMPs.
Patel, M. L., Wakayama, L. N., Bass, M. B., & Breland, J. Y. (2019). Motivational interviewing in eHealth and telehealth interventions for weight loss: A systematic review. <i>Preventive Medicine</i> , 126, 105738.	15	When compared to a no-treatment control arm, the motivational interviewing arm was associated with greater weight loss on 6 of 11 occasions, but performed better than an active comparator on only 1 of 7 occasions. Retention and engagement were generally high, though few trials examined the relation with weight loss. No trial had high risk of bias, but five lacked power calculations and only two reported fidelity to motivational interviewing. Telephone-based interventions that incorporate motivational interviewing hold promise as effective obesity treatments.
Suire, K. B., Kavookjian, J., Feiss, R., & Wadsworth, D. D. (2021). Motivational interviewing for weight management among women: A meta-analysis and systematic review of RCTs. <i>International Journal of Behavioral Medicine</i> , 28(4), 403-416.	10	Of the 3289 references initially identified, 10 intervention arms met the criteria across review tiers. Seven of 10 intervention groups reported significant anthropometric changes compared with a control group, as well as significant changes in non-anthropometric outcomes related to weight management. Using a random-effects model, the effect size of MI on reduction in body weight (kg) was 0.19 (95% CI - 0.13, 0.26; $p < 0.01$ ), and the effect size of MI on reduction in BMI was 0.35 (95% CI 0.12, 0.58; $p < 0.01$ ). Results suggest that MI interventions are useful for weight management among females. Future studies would enhance the current base of literature by utilizing advanced anthropometric outcomes, including sex-specific results, and including more diverse and larger sample sizes.
Vallabhan, M. K., Jimenez, E. Y., & Kong, A. S. (2018). Motivational Interviewing for treating overweight and obese youth: A systematic review. <i>Journal of Adolescent Health</i> , 62(2 Supplement), S119-S120.	10	<b>Results:</b> We included 10 RCTs in the analysis with a total of 1091 participants, duration of 5 to 12 months, 1 to 16 sessions, and 21 to 336 sample sizes. Overall, there was high risk of bias due to lack of blinding across studies and moderate quality of evidence. We found marginal effect in favor of MI in triglycerides mmol/L (SMD -.18; CI -.36, -.00) and no effect in body mass index (BMI) (SMD -.47; CI -1.28, .33), BMI percentile (SMD -1.07; CI -3.63, 1.48), BMI z-score (SMD -.04; CI -.20, .13), waist circumference cm (SMD .47; CI -1.30, 2.23), glucose mmol/L (SMD .10; CI -.11, .30) cholesterol mmol/L (SMD .01; CI -.17, .18) and fasting insulin pmmol/L (SMD -5.43; CI -29.16, 18.29). However, OIS necessary for detecting a statistically significant SMD was not met for any outcome. <b>Conclusions:</b> Overall, MI alone does not seem to be effective for treating overweight and obesity in adolescents. The results should be interpreted with caution due to small sample sizes overall. Larger studies of longer duration are needed to strengthen the evidence for using MI with other strategies to treat adolescent obesity.

Vallabhan, M. K., Jimenez, E. Y., Nash, J. L., Gonzales-Pacheco, D., Coakley, K. E., Noe, S. R., . . . Kong, A. S. (2018). Motivational interviewing to treat adolescents with obesity: A meta-analysis. <i>Pediatrics</i> , 142(5), e20180733.	11	<p>MI alone does not seem effective for treating overweight and obesity in adolescents, but sample size and study dose, delivery, and duration issues complicate interpretation of the results. Larger, longer duration studies may be needed to properly assess MI for weight management in adolescents.</p> <p>See also comments by Resnicow, K., Sonnevile, K. R., &amp; Naar, S. (2018). The heterogeneity of MI interventions studies for treatment of obesity. <i>Pediatrics</i>, 142(5), e20182471.</p>
Van Dorsten, B. (2007). The use of motivational interviewing in weight loss. <i>Current Diabetes Reports</i> , 7(5), 386-390.	10	Within the past two decades, motivational interviewing has emerged as a useful strategy to help individuals develop motivation to change health behavior and sustain those efforts. This article reviews the preliminary but burgeoning literature that supports the effectiveness of motivational interviewing strategies in promoting positive changes in a variety of health behaviors, including dietary change, activity increases, and regimen adherence. A variety of adaptations of the motivational interviewing process are discussed as relevant to making this treatment strategy increasingly applicable to a variety of health care settings.
<b>Obstetrics/Gynecology</b>		
Castro, K. M. G. (2016). <i>Impact of prenatal motivational interviewing on health status and health behavior related with nutrition: A systematic review</i> . M.S. Masters Thesis, Kent State University, Kent, OH.	19	More than half of the studies (N=12, 63.15%) showed significant positive impact of MI on all their primary health outcomes, while just three studies (15.78%) did not find any significant impact of MI in the established period. The quality of the studies was evaluated, with 14 studies (73.68%) rating with a strong design. The study shows that MI have a significant impact on health status and health behavior related with nutrition. A standardized method to deliver MI is needed since has been proved that it is an effective counseling technique.
Handmaker, N. S., & Wilbourne, P. (2001). Motivational Interventions in prenatal clinics. <i>Alcohol Research &amp; Health</i> , 25(3), 219-229.	22	Although the risks associated with pregnancy are well-documented, prevention efforts, for the most part, have not reached women who drink at levels that present the greatest risk. Recent clinical studies and demonstration projects show that interventions by obstetric caregivers can help reduce drinking even among women who consume alcohol at the heaviest levels. Brief interventions and motivational interviewing are two approaches that can be adapted for busy medical offices to provide interventions before, during, and after pregnancies. By combining these interventions with a stepped-care approach, practitioners will be able to intervene to prevent drinking during pregnancy while minimizing costs to the patient and demands for limited clinic resources.
Wilson, A., Nirantharakumar, K., Truchanowicz, E. G., Surenthirakumaran, R., MacArthur, C., & Coomarasamy, A. (2015). Motivational interviews to improve contraceptive use in populations at high risk of unintended pregnancy: a systematic review and meta-analysis. <i>European Journal of Obstetrics, Gynecology, and Reproductive Biology</i> , 191, 72-79.	8	Eight randomised controlled trials were included in the review with a total of 3424 women at high risk of pregnancy. Meta-analysis showed an increase in effective contraceptive use with motivational interviews when compared with control (RR 1.32 95%CI 1.11, 1.56: P=0.002) in the period of zero to four months post intervention. No difference in effective contraceptive use was shown at four to eight months (RR 1.10, 95%CI 0.93, 1.32: P=0.27), and between eight to twelve months (RR 1.18 95%CI 0.96, 1.46: P=0.12). No evidence of effect in the reduction of subsequent pregnancies or births at twelve to twenty-four months was seen with motivational interviews (RR 0.80 95%CI 0.51, 1.26: P=0.34). Motivational interviews significantly increase effective contraceptive use immediately after and up to four months



		post-intervention. The effect without reinforcement is short lasting as no evidence of effect is seen after four months post-intervention.
<b>Occupational Performance</b>		
Binder, J., Hannum, C., McCarthy, C., McLeod, E., Overpeck, J., Kaiser, L., & Potvin, M.-C. (2019). A systematic review of the efficacy of motivational interviewing on occupational performance. <i>Student Papers &amp; Posters</i> . Retrieved from <a href="https://jdc.jefferson.edu/student_papers/32">https://jdc.jefferson.edu/student_papers/32</a>	14	The 14 included studies within this systematic review evaluated the efficacy of Motivational Interviewing (MI) on seven outcomes that fall under the umbrella term of “occupational performance.” Five out of the seven outcomes were classified as moderate quality using the modified GRADES system (self-management, physical activity, quality of life, mental health, physical symptoms). <sup>25</sup> Although further research is warranted, the results demonstrated moderate clinical and statistical significance for these outcomes. While study limitations exist, MI has potential to impact occupational performance goals that relate to these outcomes. The remaining two outcomes (physical functions and employment) were categorized as low-quality recommendations utilizing a modified GRADES classification system. <sup>25</sup> The preponderance of studies ranged from low-moderate quality and results had minimal to no clinical and statistical significance. This made the potential burden on families exceed the expected amount of benefits. Therefore, the use of MI to address occupational performance goals related to these two outcomes should be implemented with extreme caution.
<b>Offenders and Violence</b>		
McMurran, M. (2009). Motivational interviewing with offenders: A systematic review. <i>Legal and Criminological Psychology</i> , 14, 83-100.	19	In total, 13 published studies and 6 dissertation abstracts were identified. MI is most evaluated in relation to substance misusing offenders ( $N=10$ ). Other applications are with domestic violence offenders ( $N=3$ ), drink-drivers ( $N=5$ ), and general offending ( $N=1$ ). In these populations, MI is used to enhance retention and engagement in treatment, improve motivation for change, and change behaviour. MI can lead to improved retention in treatment, enhanced motivation to change, and reduced offending, although there are variations across studies. To advance the study of MI with offenders, a theory of change needs to be articulated on which testable hypotheses may be based. The integrity of treatment in its application needs to be assured. Based on these foundations, more outcome research is needed to examine who responds to what type of MI in relation to treatment retention, readiness to change, and reconviction.
Santirso, F. A., Gilchrist, G., Lila, M., & Gracia, E. (2020). Motivational Strategies in Interventions for Intimate Partner Violence Offenders: A Systematic Review and Meta-analysis of Randomized Controlled Trials. <i>Psychosocial Intervention</i> , 29(3), 175-190.	7	Results indicated that IPV interventions that incorporated motivational strategies were significantly more effective in increasing the intervention dose and reducing dropout than interventions without motivational strategies. IPV offenders receiving interventions with motivational strategies were 1.73 times less likely to intervention dropout compared to those in interventions without such strategies. For physical and psychological IPV and official recidivism (e.g., rearrests, police record), evidence favored interventions with motivational strategies, although not significantly. These findings have important practical implications, especially considering the high dropout rates in IPV offender programs and the link between dropout and higher rates of recidivism.
<b>Pediatrics / Child &amp; Adolescent Health / Parent-Child Interventions</b>		

Borelli, B., Tooley, E. M., & Scott-Sheldon, L. A. J. (2015). Motivational interviewing for parent-child health interventions: A systematic review and meta-analysis. <i>Pediatric Dentistry</i> , 37(3), 254-265.	25	Relative to comparison groups, MI was associated with significant improvements in health behaviors (e.g., oral health, diet, physical activity, reduced screen time, smoking cessation, reduced second hand smoke) and reduction in body mass index. Results suggest that MI may also outperform comparison groups in terms of dental caries, but more studies are needed. MI interventions were more successful at improving diets for Caucasians and when the intervention included more MI components. Our findings provide support for providing motivational interviewing to parents and children to improve pediatric health behaviors.
Cushing, C. C., Jensen, C. D., Miller, M. B., & Leffingwell, T. R. (2014). Meta-analysis of motivational interviewing for adolescent health behavior: Efficacy beyond substance use. <i>Journal of Consulting and Clinical Psychology</i> , 82(6), 1212-1218.	15	MI interventions produced a small, but significant, aggregate effect size for short-term postintervention effects sustained at follow-up assessments averaging 33.6 weeks postintervention. MI interventions for adolescent health behavior appear to be effective. In addition, the magnitude of the aggregate effect size does not appear to differ meaningfully from reports of interventions targeting only substance use in adolescents. However, significant lack of clarity exists regarding interventionist training requirements necessary to ensure intervention effectiveness.
Erickson, S. J., Gerstle, M., & Feldstein, S. W. (2005). Brief interventions and motivational interviewing with children, adolescents, and their parents in pediatric health care settings: A review. <i>Archives of Pediatrics &amp; Adolescent Medicine</i> , 159(12), 1173-1180.	10	Although MI has consistently demonstrated efficacy in changing adult behavior, questions remain about the viability of MI with school-aged children. In particular, it is not clear whether younger children, with more limited abilities to form long-term goals and to experience ambivalence between future goals and current behavior, may demonstrate the same levels of benefits with MI. In contrast, MI appears to be highly effective in increasing self-efficacy to enact change in adolescents. MI is amassing support as a brief intervention with adolescents who are highly ambivalent or may be ambivalent about following a prescribed health care regimen. In addition, MI has shown promise as an intervention with parents of younger adolescents.
Gayes, L. A., & Steele, R. G. (2014). A meta-analysis of motivational interviewing interventions for pediatric health behavior change. <i>Journal of Consulting and Clinical Psychology</i> , 82(3), 521-535.	37	The overall effect size (Hedges's <i>g</i> ) of MI in this population as compared to both other active treatments and no treatment was slightly higher than a small effect size and also slightly higher than what has been typically found in the substance literature. Effect sizes varied by health condition such that the health domains with the largest overall effect sizes were Type 1 diabetes, asthma, and calcium intake. The effectiveness of MI in pediatric domains was moderated by factors such as practitioner background, health domain, and the family member who participated. Unexpectedly, number of MI sessions and follow-up length were not significant moderators. MI seems to be most effective when both parent and child participate in sessions and when the cultural background of the practitioner matches the family. Overall, these findings indicate that MI is an effective and appropriate intervention for targeting child health behavior changes.
Ling, J, Wen, F, Robbins, LB, Pageau, L. (2022) Motivational interviewing to reduce anthropometrics among children: A meta-analysis, moderation analysis and Grading of Recommendations Assessment, Development and Evaluation	45	A total of 2209 records were found, and 45 eligible articles were retained. MI interventions had a pooled effect of -0.15 on body mass index (BMI; 95% confidence interval [CI]: -0.24 to -0.06), -0.36 on waist circumference (WC; 95% CI: -0.71 to -0.01) and -0.22 on percent body fat (95% CI: -0.41 to -0.03). Child baseline weight status and percent low-income families were identified as significant intervention moderators. According to the GRADE assessment, the quality of evidence on BMI percentile, BMI z-score and percent body fat was

assessment. <i>Pediatric Obesity</i> . 2022;e12896. doi: <a href="https://doi.org/10.1111/ijpo.12896">10.1111/ijpo.12896</a>		moderate, while quality on BMI and WC was low. In conclusion, culturally appropriate clinic- or home-based MI interventions with adequate duration, dose and active parental involvement are promising in reducing anthropometrics among children.
<b>Physical Activity</b>		
Akinrolie, O., Barclay, R., Strachan, S., Gupta, A., Jasper, U. S., Jumbo, S. U., Askin, N., Rabbani, R., Zarychanski, R., & Abou-Setta, A. M. (2020). The effect of motivational interviewing on physical activity level among older adults: A systematic review and meta-analysis. <i>Physical &amp; Occupational Therapy In Geriatrics</i> , 38(3), 250-263.	3	There was no evidence of a significant difference between the effect of MI and usual care on physical activity in older adults (Standard Mean Difference (SMD) -0.02, 95% Confidence Interval (CI) 0.05 to 0.46, I <sup>2</sup> 16%; 3 trials; 84 participants). There is insufficient evidence to support the effect of MI on improving physical activity among older adults.
Chilton, R., Pires-Yfantouda, R., & Wylie, M. (2012). A systematic review of motivational interviewing within musculoskeletal health. <i>Psychology, Health &amp; Medicine</i> , 17(4), 392-407.	5	Five studies were identified for quality assessment. Due to variations in delivery modality, musculoskeletal condition and type of MI application it was not possible to provide direct comparative interpretations for these factors. A data synthesis was used to provide a summary of study characteristics, a narrative overview and conduct a quality assessment as well as considering authors comments on study limitations. The results of the quality assessment highlighted a number of methodological issues which supported and expanded upon those expressed by the studies' authors. None of the studies contained children or young people and in terms of training there were variations in training provider, duration and competency, as well as variation in the fidelity of MI. The findings have highlighted the need for well-designed randomised controlled trials that are suitably powered to measure the effectiveness of MI within musculoskeletal health. Future studies may consider the application of MI within musculoskeletal conditions in terms of self-management and its application to creating lifestyle changes (e.g. diet, exercise) for adults, as well as children and young people. Research currently being conducted may expand upon the evidence, feasibility and validity of MI within areas such as fibromyalgia, osteoporosis, arthritis, understanding of knee replacement and rehabilitation.
Mack, D. E., Wilson, P. M., Bell, C., & Kelley, C. (2020). The devil is always in the details: Intervention description as applied to motivational interviewing and physical activity. <i>Canadian Journal of Behavioural Science</i> , 52(1), 29-35.	51	The reporting practices in published research using a motivational interviewing (MI)-based intervention to target changes in physical activity was examined. Reporting standards were assessed with the Template for Intervention Description and Replication (TIDieR; Hoffmann et al., 2014). Two studies included all TIDieR checklist items. Missing information was evident for deviations from planned study protocol (5.90%), location and dose of MI (45.10%), and information specific to fidelity (54.60%). Clinicians and researchers will likely be restricted in using evidence from MI-based interventions targeting physical activity behaviour change due to poor reporting practices essential to intervention replication.
McGrane, N., Galvin, R., Cusack, T., & Stokes, E. (2015). Addition of motivational interventions to exercise and traditional physiotherapy: A review and meta-analysis. <i>Physiotherapy</i> , 101(1), 1-12.	6	Exercise attendance was measured in six studies (n = 378), and the results indicate that there was no significant difference in exercise attendance between the groups (REM, standardised mean difference 0.33, 95% confidence interval -0.03 to 0.68, I <sup>2</sup> 62%). Perceived self-efficacy results were pooled from six studies (n = 722), and there was significant difference between the groups in favour of the interventions (FEM, standardised mean difference 0.71, 95% confidence interval 0.55 to 0.87, I <sup>2</sup> 41%). The results for levels of activity limitation were pooled (n = 550), and a significant difference was found between the groups in favour of the

		interventions (REM, standardised mean difference -0.37, 95% confidence interval -0.65 to -0.08, I2 61%). Motivational interventions can help adherence to exercise, have a positive effect on long-term exercise behaviour, improve self-efficacy and reduce levels of activity limitation. The optimal theory choice and the most beneficial length and type of intervention have not been defined, although all interventions showed benefits. There is a need to determine how practising physiotherapists currently optimise adherence, and their current levels of knowledge about motivational interventions.
Nuss, K., Moore, K., Nelson, T., & Li, K. (2021). Effects of motivational interviewing and wearable fitness trackers on motivation and physical activity: A systematic review. <i>American Journal of Health Promotion</i> , 35(2), 226-235.	26	While SDT-based interventions and MI positively impact motivation for PA and PA behavior, WFTs revealed mixed results. Wearable Fitness Trackers prove effective among individuals not currently meeting PA guidelines but have little impact on other populations. Self Determination Theory, MI, and WFTs use provides a promising combination of interventions to increase PA among sedentary individuals, though research is limited.
O'Halloran, P. D., Blackstock, F., Shields, N., Holland, A., Iles, R., Kingsley, M., . . . Taylor, N. F. (2014). Motivational interviewing to increase physical activity in people with chronic health conditions: A systematic review and meta-analysis. <i>Clinical Rehabilitation</i> , 28(12), 1159-1171.	10	Eleven publications (of ten trials) were included. There was moderate level evidence that motivational interviewing had a small effect in increasing physical activity levels in people with chronic health conditions relative to comparison groups (standardized mean differences = 0.19, 95% CI 0.06 to 0.32, p = 0.004). Sensitivity analysis based on trials that confirmed treatment fidelity produced a larger effect. No conclusive evidence was observed for cardiorespiratory fitness or functional exercise capacity. The addition of motivational interviewing to usual care may lead to modest improvements in physical activity for people with chronic health conditions.
Pudkasam, S., Feehan, J., Talevski, J., Vingrys, K., Polman, R., Chinlumprasert, N., Stojanovska, L., & Apostolopoulos, V. (2021, in press). Motivational strategies to improve adherence to physical activity in breast cancer survivors: A systematic review and meta-analysis. <i>Maturitas</i> .	10	Subgroup analysis was performed for three motivational strategies (pedometer combined with counselling, with print material or with motivational interviewing). Meta-analysis showed that pedometer combined with another intervention has a small effect on step count (p = 0.03) and a moderate effect on duration of moderate-vigorous physical activity (MVPA) (p = <0.0001) compared to controls. Additionally, motivational strategies increase the number of participants who meet a PA goal (p = 0.005). The findings of this review endorse the use of a step tracker combined with counselling, print material or MI based on behavioral change theory.
<b>Smoking/Tobacco Cessation</b>		
Gesinde, B., & Harry, S. (2018). The use of motivational interviewing in improving medication adherence for individuals with asthma: A systematic review. <i>Perspectives in Public Health</i> , 138(6), 329-335.	11	MI intervention showed evidence of improved self-efficacy, asthma, self-management, and positive behavior change for individuals diagnosed with asthma. The results suggest that MI is a feasible and promising approach to improve attitudes toward asthma medication adherence. The generally favorable results indicate MI merged with other interventions and support is effective in improving medication adherence and is also more sustainable than MI as a stand-alone intervention. Additional research is necessary to assess the effectiveness of MI in ensuring individuals fill their prescriptions and use their medications as recommended.
Heckman, C. J., Egleston, B. L., & Hofmann, M. T. (2010). Efficacy of motivational interviewing for smoking cessation: A systematic review and meta-analysis. <i>Tobacco Control</i> , 19(5), 410-416.	31	Analysis of the trials (9485 individual participants) showed an overall OR comparing likelihood of abstinence in the motivational interviewing (MI) versus control condition of OR 1.45 (95% CI 1.14 to 1.83). Additional potential correlates of treatment effects such as study, sample, and intervention characteristics were examined. This is the most comprehensive review of MI for smoking cessation conducted to date. These findings suggest that current MI smoking cessation approaches can be effective for adolescents and adults. However, comparative efficacy trials could be useful.

<p>Hettema, J. E., &amp; Hendricks, P. S. (2010). Motivational interviewing for smoking cessation: A meta-analytic review. <i>Journal of Consulting and Clinical Psychology</i>, 78(6), 868-884.</p>	<p>31</p>	<p>Several subgroups of studies had significant combined effect sizes, pointing to potentially promising applications of MI, including studies that had participants with young age, medical comorbidities, low tobacco dependence, and, consistent with clinical practice guidelines, low motivation or intent to quit. Effects were smaller among pregnant samples. In addition, significant combined effect sizes were observed among subgroups of studies that administered less than 1 hr of MI and among studies that reported high levels of treatment fidelity.</p>
<p>Lai, D. T., Cahill, K., Qin, Y., &amp; Tang, J. L. (2010). Motivational interviewing for smoking cessation. <i>The Cochrane database of systematic reviews</i>(1), CD006936.</p>	<p>14</p>	<p>We identified 14 studies published between 1997 and 2008, involving over 10,000 smokers. Trials were conducted in one to four sessions, with the duration of each session ranging from 15 to 45 minutes. All but two of the trials used supportive telephone contacts, and supplemented the counselling with self-help materials. MI was generally compared with brief advice or usual care in the trials. Interventions were delivered by primary care physicians, hospital clinicians, nurses or counsellors. Our meta-analysis of MI versus brief advice or usual care yielded a modest but significant increase in quitting (RR 1.27; 95% CI 1.14 to 1.42). Subgroup analyses suggested that MI was effective when delivered by primary care physicians (RR 3.49; 95% CI 1.53 to 7.94) and by counsellors (RR 1.27; 95% CI 1.12 to 1.43), and when it was conducted in longer sessions (more than 20 minutes per session) (RR 1.31; 95% CI 1.16 to 1.49). Multiple session treatments may be slightly more effective than single sessions, but both regimens produced positive outcomes. Evidence is unclear at present on the optimal number of follow-up calls. There was variation across the trials in treatment fidelity. All trials used some variant of motivational interviewing. Critical details in how it was modified for the particular study population, the training of therapists and the content of the counselling were sometimes lacking from trial reports. <b>AUTHORS' CONCLUSIONS:</b> Motivational interviewing may assist smokers to quit. However, the results should be interpreted with caution due to variations in study quality, treatment fidelity and the possibility of publication or selective reporting bias.</p>
<p>Lindson-Hawley, N., Thompson, T. P., &amp; Begh, R. (2015). Motivational interviewing for smoking cessation. <i>The Cochrane Database of Systematic Reviews</i>(3), CD006936.</p> <p>Lindson N, Thompson TP, Ferrey A, Lambert JD, Aveyard P. (2019) Motivational interviewing for smoking cessation [published online ahead of print, 2019 Jul 31]. <i>Cochrane Database Syst Rev</i>. 2019;7(7):CD006936.</p>	<p>37</p>	<p>Although a few studies recruited participants who intended to stop smoking soon or had no intentions to quit, most recruited a population without regard to their intention to quit. MI was conducted in one to 12 sessions, with the total duration of MI ranging from five to 315 minutes across studies. We judged four of the 37 studies to be at low risk of bias, and 11 to be at high risk, but restricting the analysis only to those studies at low or unclear risk did not significantly alter results, apart from in one case - our analysis comparing higher to lower intensity MI. We found low-certainty evidence, limited by risk of bias and imprecision, comparing the effect of MI to no treatment for smoking cessation (RR = 0.84, 95% CI 0.63 to 1.12; I<sup>2</sup> = 0%; adjusted N = 684). One study was excluded from this analysis as the participants recruited (incarcerated men) were not comparable to the other participants included in the analysis, resulting in substantial statistical heterogeneity when all studies were pooled (I<sup>2</sup> = 87%). Enhancing existing smoking cessation support with additional MI, compared with existing support alone, gave an RR of 1.07 (95% CI 0.85 to 1.36; adjusted N = 4167; I<sup>2</sup> = 47%), and MI compared with other forms of smoking cessation support gave an RR of 1.24 (95% CI 0.91 to 1.69; I<sup>2</sup> = 54%; N = 5192). We judged both of these estimates to be of low certainty due to heterogeneity and imprecision. Low-certainty evidence detected a benefit of higher intensity MI when compared with lower intensity MI (RR 1.23, 95% CI 1.11</p>

		<p>to 1.37; adjusted N = 5620; I2 = 0%). The evidence was limited because three of the five studies in this comparison were at risk of bias. Excluding them gave an RR of 1.00 (95% CI 0.65 to 1.54; I2 = n/a; N = 482), changing the interpretation of the results. Mental health and quality of life outcomes were reported in only one study, providing little evidence on whether MI improves mental well-being.</p> <p>Authors' conclusions: There is insufficient evidence to show whether or not MI helps people to stop smoking compared with no intervention, as an addition to other types of behavioural support for smoking cessation, or compared with other types of behavioural support for smoking cessation. It is also unclear whether more intensive MI is more effective than less intensive MI. All estimates of treatment effect were of low certainty because of concerns about bias in the trials, imprecision and inconsistency. Consequently, future trials are likely to change these conclusions. There is almost no evidence on whether MI for smoking cessation improves mental well-being.</p>
Poudel, N., & Kavookjian, J. (2018). Motivational interviewing as a strategy for smoking cessation among adolescents-A systematic review. <i>Value in Health</i> , 21(Supplement 1), S238-S239.	12	<p>Of the initial 154 articles, 17 were retained, reporting 12 separate studies (4,492 total patients). 13 examine smoking abstinence, 10 smoking reductions, 7 quit rate, 1 smoking prevention, 4 diverse outcomes. 4 reported positive impact over conventional advising; the remaining showing MI impact insignificantly. Significant heterogeneity exists. MI impact was most seen in adolescents reporting as non-smokers, compared to self-reported heavy smokers.</p>
<b>Social Work</b>		
Flodgren, G. M., & Berg, R. C. (2017). Motivational interviewing as a method to facilitate return to work: A systematic review (pp. 71). Oslo: Norwegian Institute of Public Health, Division of Health Services.	5	<p>Results from three of the five studies suggest that using MI to facilitate return to work may lead to more people achieving open employment (low to very low certainty of evidence). The other two studies did not report results for open employment separately. Interpretation of other results was difficult as the study populations constituted a mix of employed and unemployed people. Only one study reported on work-hindering behavioural factors (e.g. expectancy to return to work). We could not determine the effect of MI on such factors. Despite the scarce evidence, the results of this systematic review suggest that MI may be an effective method to facilitate return to work. Further investigation, including populations with less severe conditions is required to verify this potential.</p>
Hall, M. T., Sears, J., & Walton, M. T. (2020). Motivational interviewing in child welfare services: A systematic review. <i>Child Maltreatment</i> , 25(3), 263-276.	11	<p>Eight studies described the acquisition of MI among CW workers or student trainees, and 11 studies evaluated the impact of MI on families in CW. MI's impact on some family outcomes, such as engagement in services, was mixed, though MI paired with other evidence-based treatments showed positive effects. With regard to training CW workers and students in MI, differences in training duration, intensity, and modality make conclusions difficult, though trainees generally described MI favorably and some studies showed training increased worker empathy and self-efficacy. Importantly, few published studies have evaluated whether MI-trained CW workers impact out-of-home-care placement, and no studies have evaluated their impact on maltreatment.</p>
Boyle, S., Vseteckova, J., & Higgins, M. (2019). Impact of motivational interviewing by social workers on	11	<p>Eleven studies met the inclusion criteria and were included in this review. Conclusion: MI has a positive effect on service user experience, but this was not consistent. Training was variable but the evidence suggests that practitioners need ongoing training, supervision or coaching</p>



service users: A systematic review. <i>Research on Social Work Practice</i> , 29(8), 863-875.		whilst providing MI. There was limited research examining the impact of MI on children, which was a limitation of this review. There is a need for more qualitative research to surface views and experience of service users to determine why MI is effective.
Shah, A., Jeffries, S. K., Cheatham, L. P., Hasenbein, W., Creel, M., Nelson-Gardell, S., & White-Chapman, N. (2018). Partnering with parents: Reviewing the evidence for motivational interviewing in child welfare. <i>Families in Society</i> , 100(4), 104438941880345.	16	Child welfare workers (CWWs) face challenges to engaging families, including initial parental resistance, service plan noncompliance and other barriers. Adopting a motivational interviewing (MI) framework may improve engagement and collaboration between CWWs and parents, thereby leading to better child welfare (CW) outcomes. This comprehensive narrative review identifies the use of MI in CW, the outcomes of MI use and the gaps in the literature. Of the 16 articles that met inclusion criteria for our search, 12 suggested MI's value in parenting skills, parent/child mental health, retention in services, substance use, and CW recidivism. Four of these studies specifically focused on CWW. Future studies should examine specific CW outcomes such as reunification, parent/child relationships, recidivism and parent/child mental health.
Simmons, C. A., Howell, K. H., Duke, M. R., & Beck, J. G. (2016). Enhancing the impact of family justice centers via motivational interviewing: An integrated review. <i>Trauma, Violence, &amp; Abuse</i> , 17(5), 532-541.	4	Findings from this integrated literature review make it clear that greater empirical investigation is needed for both the Family Justice Center model of service delivery and consideration of ways to make the FJC model more client-oriented. Of the potential mechanisms that could be beneficial, the use of the MI style within this system holds considerable promise for survivors of interpersonal violence. However, rigorous empirical evaluation is needed to develop a stronger evidentiary base for the use of MI within an FJC, including comparing clients who receive treatment as usual to those who receive MI across a host of key psychosocial variables.
<b>Therapeutic Mechanisms (of Motivational Interviewing)</b>		
Apodaca, T. R., & Longabaugh, R. (2009). Mechanisms of change in motivational interviewing: A review and preliminary evaluation of the evidence. <i>Addiction</i> , 104, 705-715.	19	Four constructs of therapist behavior were evaluated: MI-Spirit, MI-Consistent behaviors, MI-Inconsistent behaviors and therapist use of specific techniques. Five constructs of client behavior were evaluated: change talk/intention, readiness to change, involvement/engagement, resistance and the client's experience of discrepancy. The absence of experimental and full mediation studies of mechanisms of change was notable. Effect sizes were generally mixed. The most consistent evidence was found for three constructs: client change talk/intention (related to better outcomes); client experience of discrepancy (related to better outcomes); and therapist MI-Inconsistent behavior (related to worse outcomes). Regarding therapist use of specific techniques, use of a decisional balance exercise showed the strongest association to better outcomes.
Copeland, L., McNamara, R., Kelson, M., & Simpson, S. (2015). Mechanisms of change within motivational interviewing in relation to health behaviors outcomes: a systematic review. <i>Patient Education and Counseling</i> , 98(4), 401-411.	37	291 studies were identified and 37 met the inclusion criteria. Few of the 37 studies included, conducted mediation analyses. MI spirit and motivation were the most promising mechanisms of MI. Although self-efficacy was the most researched, it was not identified as a mechanism of MI. Study quality was generally poor. Although this review has indicated possible mechanisms by which MI could influence health behavior outcomes, it also highlights that more high quality research is needed, looking at other possible mechanisms or causal pathways within health behavior outcomes. MI spirit possibly plays an important role within MI and may potentially be used to evoke change talk which links to outcomes.



<p>Magill, M., Gaume, J., Apodaca, T. R., Walthers, J., Mastroleo, N. R., Borsari, B., &amp; Longabaugh, R. (2014). The technical hypothesis of motivational interviewing: A meta-analysis of MI's key causal model. <i>Journal of Consulting and Clinical Psychology</i>, 82(6), 973-983.</p>	<p>16</p>	<p>A systematic literature review, using stringent inclusion criteria, identified 16 reports describing 12 primary studies. We used review methods to calculate the inverse-variance-weighted pooled correlation coefficient for the therapist-to-client and the client-to-outcome paths across multiple targeted behaviors (i.e., alcohol or illicit drug use, other addictive behaviors). RESULTS: Therapist MI-consistent skills were correlated with more client language in favor of behavior change (i.e., change talk; <math>r = .26</math>, <math>p &lt; .0001</math>), but not less client language against behavior change (i.e., sustain talk; <math>r = .10</math>, <math>p = .09</math>). MI-inconsistent skills were associated with less change talk (<math>r = -.17</math>, <math>p = .001</math>) as well as more sustain talk (<math>r = .07</math>, <math>p = .009</math>). Among these studies, client change talk was not associated with follow-up outcome (<math>r = .06</math>, <math>p = .41</math>), but sustain talk was associated with worse outcome (<math>r = -.24</math>, <math>p = .001</math>). In addition, studies examining composite client language (e.g., an average of negative and positive statements) showed an overall positive relationship with client behavior change (<math>r = .12</math>, <math>p = .006</math>; <math>k = 6</math>). This meta-analysis provides an initial test and partial support for a key causal model of MI efficacy. Recommendations for MI practitioners, clinical supervisors, and process researchers are provided.</p>
<p>Magill, M., Apodaca, T. R., Borsari, B., Gaume, J., Hoadley, A., Gordon, R. E. F., . . . Moyers, T. (2018). A meta-analysis of motivational interviewing process: Technical, relational, and conditional process models of change. <i>Journal of Consulting and Clinical Psychology</i>, 86(2), 140-157.</p>	<p>36</p>	<p>OBJECTIVE: In the present meta-analysis, we test the technical and relational hypotheses of Motivational Interviewing (MI) efficacy. We also propose an a priori conditional process model where heterogeneity of technical path effect sizes should be explained by interpersonal/relational (i.e., empathy, MI Spirit) and intrapersonal (i.e., client treatment seeking status) moderators.</p> <p>METHOD: A systematic review identified <math>k = 58</math> reports, describing 36 primary studies and 40 effect sizes (<math>N = 3,025</math> participants). Statistical methods calculated the inverse variance-weighted pooled correlation coefficient for the therapist to client and the client to outcome paths across multiple target behaviors (i.e., alcohol use, other drug use, other behavior change).</p> <p>RESULTS: Therapist MI-consistent skills were correlated with more client change talk (<math>r = .55</math>, <math>p &lt; .001</math>) as well as more sustain talk (<math>r = .40</math>, <math>p &lt; .001</math>). MI-inconsistent skills were correlated with more sustain talk (<math>r = .16</math>, <math>p &lt; .001</math>), but not change talk. When these indicators were combined into proportions, as recommended in the Motivational Interviewing Skill Code, the overall technical hypothesis was supported. Specifically, proportion MI consistency was related to higher proportion change talk (<math>r = .11</math>, <math>p = .004</math>) and higher proportion change talk was related to reductions in risk behavior at follow up (<math>r = -.16</math>, <math>p &lt; .001</math>). When tested as two independent effects, client change talk was not significant, but sustain talk was positively associated with worse outcome (<math>r = .19</math>, <math>p &lt; .001</math>). Finally, the relational hypothesis was not supported, but heterogeneity in technical hypothesis path effect sizes was partially explained by inter- and intrapersonal moderators.</p> <p>CONCLUSIONS: This meta-analysis provides additional support for the technical hypothesis of MI efficacy; future research on the relational hypothesis should occur in the field rather than in the context of clinical trials.</p>
<p>Magill, M., Bernstein, M. H., Hoadley, A., Borsari, B., Apodaca, T. R., Gaume, J., &amp; Tonigan, J. S. (2019). Do what you say and say what you are going to do: A</p>	<p>13</p>	<p>A systematic review identified <math>k = 13</math> primary studies, contributing 16 MI conditions (<math>N = 1556</math>). The pooled correlation coefficient was used to assess the significance, direction, and strength of seven language subtypes (i.e., reason, desire, need, ability, commitment,</p>

preliminary meta-analysis of client change and sustain talk subtypes in motivational interviewing. <i>Psychotherapy Research</i> , 29(7), 860-869.		taking steps, and other) by three valences (i.e., frequency positive or change talk, frequency negative or sustain talk, and proportion change talk) and their relationship to subsequent engagement in addictive behavior. Results: For frequency measures, more sustain talk related to reason, desire, ability, and other were associated with more addictive behavior at follow up. Other change talk was associated with MI outcomes but in an unexpected direction (i.e., more addictive behavior). Proportion measures showed more proportion change talk-reason and -other statements were associated with less addictive behavior at follow up. Sensitivity analyses indicated some heterogeneity and instability of effect sizes, but no evidence of publication bias. Conclusions: This preliminary meta-analysis suggests that aggregate measures of change and sustain talk are comprised of statement subtypes that are not equally meaningful in predicting outcome following MI for addictive behavior change.
Pace, B. T., Dembe, A., Soma, C. S., Baldwin, S. A., Atkins, D. C., & Imel, Z. E. (2017). A multivariate meta-analysis of motivational interviewing process and outcome. <i>Psychology of Addictive Behaviors</i> , 31(5), 524-533.	19	Based on 19 primary studies (N = 2,614), we found a significant relationship between MI-consistent therapist behaviors and greater client change talk, as well as greater client sustain talk. Higher therapist global ratings (empathy and MI spirit) were significantly related to increased MI-consistent behaviors, decreased MI-inconsistent behaviors, increased client change talk, yet also increased client sustain talk. Therapist global ratings were not significantly related to clinical outcomes. Client sustain talk was a significant predictor of worse clinical outcomes, while client change talk was unrelated to outcome. Variability within the correlations indicated that MI-consistent and MI-inconsistent therapist behaviors were differentially related to therapist global ratings of empathy and MI spirit. Similar to past research, present findings provide equivocal support for hypothesized MI process outcome relationships.
Romano, M., & Peters, L. (2015). Evaluating the mechanisms of change in motivational interviewing in the treatment of mental health problems: A review and meta-analysis. <i>Clinical Psychology Review</i> , 38(June), 1-12.	20	Twenty studies met inclusion criteria and examined a range of potential MI mechanisms, including patient motivation and confidence, patient resistance, and engagement. Results indicated that while MI did not increase patient motivation more so than did comparison conditions, MI showed a favourable effect on patient engagement variables. However, medium to high levels of heterogeneity were detected for patient engagement, indicating significant differences between studies. Heterogeneity was somewhat explained through subgroup analyses examining the effect of comparison condition and participant diagnosis. Overall, there were few MI mechanisms of change available for review, though the results suggest that patient engagement with treatment may be a potential mechanism of change in populations diagnosed with anxiety, mood, and psychotic disorders.
Romano, M., & Peters, L. (2016). Understanding the process of motivational interviewing: A review of the relational and technical hypotheses. <i>Psychotherapy Research</i> , 26(2), 220-240.	37	Thirty-seven studies met inclusion criteria. The results suggest that when clinicians utilise MI consistent behaviours, clients are more likely to express language in favour of change. Furthermore, this client language was consistently related to positive client outcome across studies. Conclusions: While the results support some parts of the Miller and Rose model, additional research is needed to confirm the findings in diverse populations. Understanding the mechanisms of MI's effectiveness may maximise the implementation of MI, potentially contributing to better client outcomes
<b>Training (of Motivational Interviewing)</b>		
Bahafzallah, L., Hayden, K. A., Bouchal, S. R., Singh, P., & King-Shier, K. M. (2020). Motivational	61	Cultural acknowledgment and considerations with MI, when described, enhanced effectiveness of MI in most ethnic groups. The length and the number of sessions had no

interviewing in ethnic populations. <i>Journal of Immigrant and Minority Health</i> , 22(4), 816-851.		apparent influence on the success of MI. When examined, most study participants reported acceptance of the intervention; however, there were challenges, most notably for Chinese patients. MI can be effective in a variety of ethnic groups, particularly when cultural acknowledgement is included in the process.
Barwick, M. A., Bennett, L. M., Johnson, S. N., McGowan, J., & Moore, J. E. (2012). Training health and mental health professionals in motivational interviewing: A systematic review. <i>Children and Youth Services Review</i> , 34(9), 1786-1795.	22	A total of 22 studies were included in this review. Seventeen of the 22 studies reported significant practitioner behavior change relative to motivational interviewing skills, notwithstanding variation in training approach, population, outcome measures, and study quality. This review demonstrates practitioner behavior change on MI skills utilizing a variety of training and outcome methods. Future work of high methodological rigor, clear reporting, and that attends to training as one part of the implementation process will help to elucidate the factors that lead to the uptake of new practices.
de Roten, Y., Zimmerman, G., Ortega, D., & Despland, J. N. (2013). Meta-analysis of the effects of MI training on clinicians' behavior. <i>Journal of Substance Abuse Treatment</i> , 45, 155-162.	15	We conducted a meta-analytic review of clinicians' MI-training and MI-skills findings. Fifteen studies were included, involving 715 clinicians. Pre-post training effect sizes were calculated (13 studies) as well as group contrast effect sizes (7 studies). Pre-post training comparisons showed medium to large ES of MI training, which are maintained over a short period of time. When compared to a control group, our results also suggested higher MI proficiency in the professionals trained in MI than in nontrained ones (medium ES). However, this estimate of ES may be affected by a publication bias and therefore, should be considered with caution. Methodological limitations and potential sources of heterogeneity of the studies included in this meta-analysis are discussed.
Hall, K., Staiger, P. K., Simpson, A., Best, D., & Lubman, D. I. (2016). After 30 years of dissemination, have we achieved sustained practice change in motivational interviewing? <i>Addiction</i> , 111(7), 1144-1150.	20	Of the 20 studies identified, 15 measured training at a follow-up time-point using standard fidelity measures. The proportion of clinicians who reached beginning proficiency was either reported or calculated for 11 of these studies. Only two studies met our criterion of 75% of clinicians achieving beginning proficiency in MI spirit after training. Of the 20 studies identified, two measured client substance use outcomes with mixed results. A broad range of training studies failed to achieve sustained practice change in MI according to our criteria. It is unlikely that 75% of clinicians can achieve beginning proficiency in MI spirit after training unless competency is benchmarked and monitored and training is ongoing. The impact of training on client outcomes requires future examination.
Hurlocker, M. C., Madson, M. B., & Schumacher, J. A. (2020). Motivational interviewing quality assurance: A systematic review of assessment tools across research contexts. <i>Clinical Psychology Review</i> , 82, 101909.	21	We identified 199 empirical studies that employed an MI fidelity/skill tool and we found 21 tools with varying degrees of empirical support and theoretical congruence. Specifically, we identified five observer-, two trainee- and one client-rated tool with strong empirical support, and nine observer- and two client-rated tools with preliminary empirical support. We detailed the empirical strength, including the extent to which tools were linked to trainee/client outcomes across research contexts and offer recommendations on which MI tools to use in training, efficacy, and effectiveness trials.
Kaczmarek, T., Kavanagh, D., Lazzarini, P. A., Warnock, J., & Van Netten, J. J. (2021 in press). Training diabetes healthcare practitioners in motivational interviewing: A systematic review. <i>Health Psychology Review</i> . <a href="https://doi.org/10.1080/17437199.2021.1926308">https://doi.org/10.1080/17437199.2021.1926308</a>	22	Of 625 abstracts screened, 22 papers from 17 unique studies were included. All 17 studies reported some improvement in MI skills, with 14 finding improvements in more than 50% and three less than 35%. However, risk of bias and outcome measures varied widely between studies. All studies showed diabetes healthcare practitioners acquired and applied MI skills post-training, to varying levels. Findings suggest training should include education, role play, and ongoing supervision to maintain skills.

Kaltman, S., & Tankersley, A. (2020). Teaching motivational interviewing to medical students: A systematic review. <i>Academic Medicine</i> , 95(3), 458-469.	16	The results of this review suggest that the implementation of MI curricula in medical schools can be feasible and effective and that students can achieve beginning levels of proficiency. The results support the inclusion of MI in undergraduate medical education curricula and highlight next steps to advance this area of medical education research: achieving consensus around essential early MI skills that should be taught in medical schools and identifying the most effective scaffolding strategies to teach this complex mode of communication.
Keeley, R., Engel, M., Reed, A., Brody, D., & Burke, B. L. (2018). Toward an emerging role for motivational interviewing in primary care. <i>Psychiatry in Primary Care</i> , 20(41).	3	This review describes how recent research findings addressing the knowledge gaps support a growing role for MI in primary care. Recent Findings: Two trials of MI training combined classroom time with ongoing coaching and feedback, resulting in enhanced MI ability relative to a control arm where PCPs received minimal or no MI training. A third MI training trial excluded coaching and feedback, failing to increase use of MI. Adding to a growing list of behavioral health-related problems for which MI training has shown some effectiveness, a trial of training PCPs to use MI with depressed patients was associated with significantly improved depressive symptoms. Moreover, aspects of the PCPs' MI-related language and patients' arguments for positive behavior changes, "change talk," appeared to explain the positive effects of MI training on depression outcome. Summary MI-training approaches have improved such that PCPs and possibly other clinic staff may want to consider MI training as a way to more effectively support their patients as they address behavioral health-related problems (e.g., tobacco use). MI training should focus on eliciting "change talk" from patients.
Madson, M. B., & Campbell, T. C. (2006). Measures of fidelity in motivational enhancement: A systematic review. <i>Journal of Substance Abuse Treatment</i> , 31, 67-73.		The movement to use empirically supported treatments has increased the need for researchers and clinical supervisors to evaluate therapists' adherence to and competence in particular empirically supported interventions. Motivational interviewing (MI) is an empirically supported intervention for substance abuse and other behavioral problems. However, for this intervention to work, it must be provided with fidelity and skill. This article provides a systematic review of MI adherence and competence measures that have been developed and described independently elsewhere. Recommendations for refinement of the measures and future research are also discussed.
Madson, M. B., Loignon, A. C., & Lane, C. (2009). Training in motivational interviewing: a systematic review. <i>Journal of Substance Abuse Treatment</i> , 36(1), 101-109.	27	Motivational interviewing (MI), an evidence-based counseling approach, has received much recognition from a wide variety of health care professionals. Because of the rising interest in MI, there is increasing demand for training in this counseling approach. The MI training community has answered this call and as a result placed much emphasis on studying the MI training process. The purpose of this article is to provide a systematic review of the published research on MI training. Our goal is to provide a consolidated account of MI trainings outlining the populations receiving training, methods used, and training outcomes. We also identify which aspects of the (W. R. Miller & T. B. Moyers, 2006) eight stages of learning MI each study addressed. Recommendations for advancing the MI training research are highlighted.
Maslowski, A. K., Owens, R. L., LaCaille, R. A., & Clinton-Lissell, V. (2021 in press). A systematic review and meta-analysis of motivational interviewing training	15	A large and significant overall Hedges' g of 0.90 (95% CI [0.45, 1.35]) was found. When restricted to randomized controlled trials only, it decreased to moderate-in-size (g = 0.74, CI [0.41, 1.56]). Significant effects were observed with the knowledge, empathy, and change

effectiveness among students-in-training. <i>Training and Education in Professional Psychology</i> .		plan outcomes. Moderation analyses revealed training length was a significant moderator, with greater effects being associated with longer trainings.
Parins, A. E. (2021). The collision of a pandemic and epidemic: Effectiveness of student-led motivational interviewing for patients with substance use disorders. <i>Lynchburg Journal of Medical Science</i> , 3(90).	3	The studies revealed favorable patient outcomes following brief student-led motivational interviewing. It is feasible for health professions students trained in motivational interviewing to perform successful behavior change counseling with patients. Student contribution as part of the team would be a valuable resource for patients, public health, and clinicians/preceptors. Future research should examine the sustainability of the intervention effect over time, how to ensure continuity of care, and how it affects other clinical outcomes.
Schwalbe, C. S., Oh, H. Y., & Zweben, A. (2014). Sustaining motivational interviewing: A meta-analysis of training studies. <i>Addiction</i> , 109(8), 1287-1294.	21	A meta-analysis of training studies was conducted with studies that reported MI skills using observational measures and that included trainees from real-world agency settings. Standardized change scores were calculated to indicate the magnitude of pre-post training change in MI skills; standardized change scores from post-training to 3 and 6+ months follow-up were calculated to indicate the sustainability of training gains over time. Effect sizes were aggregated using random effects models. RESULTS: Twenty-one papers that reported the effects of MI training on agency staff were included in this review. Across studies, training yielded gains in MI skills ( $d = 0.76$ ). Studies that did not include feedback and/or coaching reported eroding skills over a 6-month follow-up ( $d = -0.30$ ), whereas post-workshop feedback/coaching sustained skills ( $d = 0.03$ ). Effects of post-workshop feedback/coaching were moderated by frequency, duration and length of training. Moreover, studies reporting low levels of attrition from training protocols showed small increases in skills over the 6-month follow-up period ( $d = 0.12$ ), whereas studies with high attrition showed skill erosion ( $d = -0.29$ ). CONCLUSIONS: On average, three to four feedback/coaching sessions over a 6-month period sustain skills among trainees for motivational interviewing, mainly for substance use disorder treatment. However, high rates of attrition from feedback/coaching contributes to post-workshop skill erosion.
Soderlund, L. L., Madson, M. B., Rubak, S., & Nilsen, P. (2011). A systematic review of motivational interviewing training for general health care practitioners. <i>Patient Education and Counseling</i> , 84(1), 16-26.	10	Ten studies were found. The median length of the training was 9h. The most commonly addressed training elements were basic MI skills, the MI spirit, recognizing and reinforcing change talk, and rolling with resistance. Most studies involved follow-up training sessions. The study quality varied considerably. Five studies assessed training outcomes at a single point in time, which yields low internal validity. Four studies used random assignment of practitioners to the MI training and comparison conditions. The training generated positive outcomes overall and had a significant effect on many aspects of the participants' daily practice, but the results must be interpreted with caution due to the inconsistent study quality. CONCLUSIONS: The generally favourable training outcomes suggest that MI can be used to improve client communication and counselling concerning lifestyle-related issues in general health care. However, the results must be interpreted with caution due to inconsistent methodological quality of the studies. PRACTICE IMPLICATIONS: This review suggests that MI training outcomes are generally favourable, but more high-quality research is needed to help identify the best practices for training in MI.