▶ Motivational interviewing: a pilot test of active ingredients and mechanisms of change.

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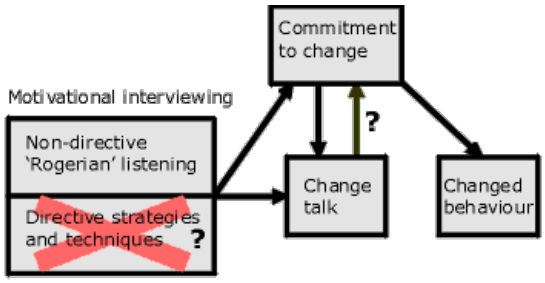
Motivational interviewing's originator has stressed how unexpected findings can force fruitful rethinking. This study may prove an example; designed to forefront the approach's distinct active ingredients, other than fleetingly and non-significantly, these did not seem active at all among the stable, moderately dependent drinkers recruited to the trial.

SUMMARY Motivational interviewing is probably the most influential and widely implemented formal counselling style in the treatment of problem substance use. How it works has been investigated, but rarely in studies which deliberately vary the mix of supposedly active ingredients (key therapist strategies that facilitate positive change) to test whether they really do affect mechanisms of change in the client (such as developing skills and making commitments to change) and finally substance use itself. This US study was the first to do so among heavily drinking clients aiming to cut down rather than stop altogether, and who sought help rather than being identified through screening programmes. Among treatment-seeking problem drinkers, also a first was its comparison of a 'self-change' option with therapist-led interventions.

Theory behind the study

The study was based on the distinction made in motivational interviewing between 'relational' and 'technical' active ingredients. The former (the 'spirit' of the approach) refer to elements of *non*-directive counselling including empathic listening, avoiding negative therapeutic interactions, and monitoring and repairing ruptures to the therapeutic relationship. Technical elements are the *directive* strategies and techniques geared to moving the client in the desired direction (in this case, reduced substance use), including sharpening their perception that how they actually behave is not how they wish to, the resolution of ambivalence, and securing a commitment to a behaviour change goal.



The issues: what happens when directive elements are deleted from motivational interviewing; and is change talk merely a sign of commitment to change or does it actively boost that commitment?

Together these active ingredients are intended to elicit statements from the client in support of the desired change – so called 'change talk', the sincere emergence of the client's own reasons for change, promoted by active shaping and reinforcement of their responses by the therapist. Change talk is hypothesised to be the mechanism which in turn leads to behaviour change.

The implication is that without these directive, technical elements, non-directive counselling (motivational interviewing stripped of its specific levers of change) would be less effective, but both would be better than leaving patients to 'self-change' without any counselling.

How the theory was tested

To test these expectations the study recruited 89 adult problem drinkers, all but nine of those assessed after responding to ads for treatment aimed at drinking less and which emphasised client choice. As assessed in interviews with research staff, they had to be on average drinking more than 210g alcohol a week for women or 336g for men and to meet criteria for alcohol abuse or dependence, but not so severely dependent as to have experienced withdrawal symptoms. Most were mildly or moderately dependent, averaging around 434g alcohol a week and 84g on each day they drank. They had to be aiming for moderation rather than abstinence, socially stable, and not severely mentally ill or seriously involved in regular use of other drugs. About evenly split between men and women, typically they were in their 30s and 40s, employed, well educated and had never been treated for drinking problems.

Throughout the therapy phase of the study, all patients were asked each day to report their drinking and issues and situations which may have prompted drinking. For the first week this was all they did. Then all were further assessed and results fed back to them indicating the seriousness of their drinking.

The interventions

After this they were allocated at random to one of two therapies or told to try to curb drinking on their own. Effectively these options delivered the full set of motivational interviewing's active ingredients, only the non-directive set, or none. The three options were:

- Motivational interviewing spanning four one-hour sessions over seven weeks with both the non-directive 'spirit' elements (see below) and more directive techniques to lead the client to commit to curb their drinking, a combination expected to lead to the greatest drinking reductions.
- Just the non-directive or 'Rogerian' [after the therapist Carl Rogers – see this discussion] elements over the same phasing of sessions and delivered by the same (generally) experienced motivational therapists, featuring therapist warmth, genuineness, and egalitarianism, emphasis on the client's responsibility for change, extensive reflective listening, and avoiding therapist behaviours contrary to motivational interviewing's spirit. More directive techniques were explicitly proscribed, extending to the use of reflective listening to reinforce change talk. Instead reflections focused on echoing and exploring the patient's emotions and experiences.
- A self-change option in which (after the assessment feedback given to all clients) participants were told to try to change on their own over the next eight weeks, after which they would be offered treatment. They were told some people could manage this without professional help, and that monitoring their drinking and being interviewed for research purposes might help. Clients met only technical research staff, not therapists.

Primarily at issue was whether over the last half of the eight weeks before self-change clients were offered treatment, these options would be associated with progressively less steep reductions in average weekly alcohol consumption, assessed by three research interviews each completed by at least 92% of clients in the study. Patients from the start allocated to the two forms of therapy were

also followed up for a further four weeks.

If these options did differ in effectiveness, what might have helped cause this was assessed by rating session videos for how often and how strongly clients committed to change (or not to change) their drinking, and related comments on, for example, their ability or desire to change. The videos also showed that therapists stuck well to their 'scripts', as did feedback from clients.

Main findings

The anticipated findings did not materialise. All three sets of clients reduced their drinking over the eight weeks of the therapy period, but not by significantly different degrees. Unexpectedly, such minor differences as there were favoured the spirit-only option, though (as expected) least effective was self-change. Among the two groups offered therapy over this period, drinking fell from an average of about 456g alcohol a week to 298g by the last half of the period. Over the next four weeks it fell further to average 227g, about half the pre-treatment level, but again with no significant differences between full motivational interviewing and the stripped down version.

With no advantages for any of the options needing to be explained, there was no point in looking for mechanisms to explain them. Instead the researchers probed the data for results they had not planned to look for in advance, a procedure which limits confidence in the robustness of any which emerge. None did emerge when drinking intensity or consequences replaced weekly consumption as the outcome, and such differences as there were did not favour the full motivational option. Also not found was any indication that more severely dependent participants had reacted better to this option than to the supposedly less effective alternatives.

Fleeting concordance with theory

However, during one period of the study the drinking reduction pattern did look like that expected. This was over the first two weeks of the therapy period during and after the first two sessions, when all three groups made most of their reductions in drinking. The drop was steepest among those offered full motivational interviewing and least among those left to their own devices, the expected pattern. These differences were appreciable but not statistically significant. Later the non-directive group 'caught up' and by the end of the eight weeks the difference had reversed, but the early pattern offered the opportunity to test whether the expected change-talk mechanism had fleetingly been at work.

The comparison was between full motivational interviewing versus non-directive counselling. Though not all the links were statistically significant, by the end of the first session the motivational option had generated stronger commitments to curb drinking, which seemed enacted in the following week when these clients' did make extra drinking reductions. Further analysis indicated that generating stronger change talk was at least part of the reason for this advantage. In the second session a week later the motivational option also generated stronger change talk, but this was not linked to further reductions in drinking. Only the first session showed signs of the expected links.

The authors' conclusions

Since differences were small and not in the expected direction, it seems unlikely that failure to find extra benefits from the full motivational option was due to having too few participants. This surprising outcome seems to direct our attention beyond the specific elements included or not in each of the three options, to the features they share, and to drivers of change which are not unique to therapy, but active in the self-change process which proved equal to formal therapy.

The first two sessions of motivational interviewing did (non-significantly) accelerate drinking reductions, but by the end these advantages had narrowed or reversed. Acceleration after the first session seemed due in part to the generation of stronger change talk, a finding consistent with the expected mechanism but which should be interpreted cautiously.

A plausible explanation of the findings is that motivational interviewing is uniquely effective in mobilising rapid change in the context of a one- or two-session intervention. However, in a longer treatment well delivered Rogerian therapy can achieve equivalent effects for problem drinkers. Why self-change was almost as effective as motivational interviewing might be due to daily self-monitoring of alcohol consumption, a high level of contact with research staff, and a short follow-up.

In the only previous similar study, over the following six months frequent heavy drinking was significantly less common when motivational interviewing techniques had been added to non-directive listening, but other drinking outcomes were not significantly affected. Another study has shown that (with college students concerned about their drinking) therapists can deploy strategies which increase the frequency of change talk, a finding confirmed in the current study.

Together with the current study, this work means it remains an open question whether motivational interviewing's directive strategies augment its effects, or whether the non-directive elements alone might be equally effective.

All these studies used random allocation to different types of therapy to investigate how therapy works. Others have instead observed links between outcomes and active ingredients and mechanisms as they emerge in studies primarily designed for other purposes. It means any links they find cannot securely be attributed to cause and effect, but may have been due to other factors. Generally motivational interviewing's stance and techniques have been found associated with increased change talk, and these commitments to change associated with reductions in drinking.

The primary limitations of this study are its relatively small sample size and short-term follow-up. Also its findings are limited to problem drinkers seeking moderation who voluntarily attend treatment with minimal coercion from outside sources. Participants with more severe drinking problems and those coerced in to treatment might respond differently.

FINDINGS COMMENTARY William Miller, motivational interviewing's originator, has observed that in science, "Failure to confirm expectations is a particularly fruitful point [which] if taken seriously, lead[s] one back to the drawing board of discovery to develop a better theory for subsequent testing". This study may prove an example, delivering a comprehensive reversal for the expectation that motivational interviewing would prove preferable to non-directive counselling, and even more unexpectedly, failing to find it significantly better than going it alone pending therapy. On no measure of drinking were these expectations fulfilled; frequently the slight advantage was with non-directive counselling.

Not too much should be made of one small study, especially one seemingly contradicted by a predecessor, but to date this is the most rigorous test we have of whether motivational interviewing's theory stands up and with it the approach's intended superiority to the bedrock of substance use (and other problems) counselling – non-directive listening. Instead it turned the spotlight among treatment-seeking, stable and not very dependent drinkers, on their own impetus to change, and suggests change talk is not active in itself, but a sign of that impetus drawn out by motivational techniques. Along the way the study also demonstrated the value of offering some kind of intervention to excessive drinkers which does not deter by insisting on abstinence, and added to the substantial accumulation of research showing that well structured therapies are equivalent in their effects. It also suggested in line with other research that motivational interviewing can accelerate change and/or achieve it in a shorter time than alternatives, and partially confirmed the role techniques and activities play in forging a deeper therapeutic relationship, supporting assertions that *how* the therapist acts with clients cannot entirely be divorced from the *content* of those acts – from what they and the client do together.

Unfold supplementary text for more detailed discussion of these points.

Main findings in context

Potentially far-reaching as they are, the study's findings are limited to socially stable and not very dependent drinkers whose

problems had never been troubling enough to force them to seek help in the normal way, but who instead responded to ads which, unusually for the USA, offered not to help them stop drinking, but merely to cut down. They drank on average the equivalent of four pints of beer a night – excessive, but far below the levels seen in normal clinic caseloads. The results might have been different in severely dependent patients seeking treatment whose multiple needs demanded correspondingly extensive help, or in heavy drinkers not seeking help at all but identified through screening programmes, who might be more in need of an explicit motivational boost before they would consider cutting back. A similar but larger study is being planned with better measures and longer-term follow-up, the results of which may alter the picture.

That the two therapies were roughly equivalent is in line with general findings that therapies based on motivational interviewing are no better at curbing problem substance use than other structured therapies. Also possibly relevant was the strength of the comparison treatment. This majored on reflective listening, found both in brief intervention studies of heavy drinkers identified by screening, and in a major study of problem drinkers seeking treatment, to be the key generator of instances of change talk in the only/initial sessions of motivational interviewing, in line with advice that this core skill should be prominent in the early stages. The experienced counsellors who were further trained and supervised for the featured study can be expected to have used this skill well and perhaps in directions which encouraged change, if not in ways which could be counted by the observers.

The similar study whose contrary findings were criticised as derived from only one of six outcome measures cannot be dismissed on this basis, as the one which did show motivational interviewing preferable had been identified in advance as the study's primary outcome. It was also the measure (frequent heavy drinking) which best reflected remission in truly problematic drinking. However, the caution that in this study the non-directive comparator might not have seemed a credible treatment is more convincing; so non-directive was it that if patients wanted to talk about the weather, that was fine. It might have puzzled and disappointed patients who (unlike in the featured study) had gone to a substance use clinic seeking help and had all been diagnosed as dependent on alcohol. Still this study remains a demonstration that motivational interviewing *can* be more effective than non-directive listening, just as the featured study shows it need not be.

Along the way, the featured study demonstrated the value of extending even brief and unsophisticated interventions (the self-change option consisting primarily of assessment and feedback) which do not 'threaten' a life devoid of drink, to excessive drinkers whose social stability means they would not normally seek or be forced to enter treatment.

The potency of being non-directive – or of self-direction?

The non-directive option was modelled on therapist Carl Rogers' classic formulation (for more see here) of the six "necessary and sufficient conditions" for clients to get better: the communication of genuineness, unconditional (no 'ifs' qualifying the therapist's acceptance of the patient) positive regard and empathic understanding to clients in need of help to get their actions, thoughts and self-perceptions in line. For Rogers, techniques such as reflecting back to the client your understanding of their comments and feelings, interpretations, decisional balance exercises, analysing triggers and skills training, are not active ingredients in themselves, but ways these relational qualities are communicated. That does not mean techniques are trivial, because communicating these qualities is seen as another essential component. These qualities – especially unconditional positive regard – are also what heavy drinking patients seek in a helper.

The possible potency of the non-directive option does not, however, explain why *neither* therapy was more effective than the self-change option. Like the equivalence of the two therapies, again this is in line with other research. Self-change entailed daily self-monitoring (perhaps motivated partly by commitment to the study), thorough assessment of drinking and related issues, and feedback from assessment. Assessment and feedback have been found in most brief intervention studies with people not actively seeking help to work almost as well as motivational interviewing. In the linked review, the two exception studies (1 2) concerned cannabis use and assessed longer term outcomes 12 months after intervention. Even these leave it unclear whether *any* well controlled, randomised trial, including the featured study, has found motivational interviewing more effective than assessment plus feedback in help-seeking populations.

That among socially stable dependent drinkers a largely self-change option can equal formal treatment was established in a British study published in 1977. With their female partners, as in the featured study men seeking treatment were extensively assessed and given feedback (told they were an alcoholic) by the therapists, and then told that for the rest their recovery lay in their own hands; there would be no more appointments. Monitoring took the form of monthly social work contact with the wife. The departure from the featured study was explicit advice not to drink. Patients' progress in curbing their drinking over the next year was not significantly worse than among those offered the fully-fledged treatment of the time, a result later reinforced and extended to single men and women in Scotland. Similarly, in the Project MATCH alcohol treatment trial in the USA, patients enrolled in the study and assessed, but who did not return for therapy, did almost as well as those who attended all 12 sessions of the more extensive therapies. Among the remainder, nearly all the improvement there was going to be in drinking had occurred by week one, before most of the treatment had been delivered. MATCH researchers ended up prioritising not the impact of their cutting-edge therapies, but what they had in common – most of all, what the patient brought to the treatment. Unlike the difference in therapies, how much patients wanted to change and were ready to do so beforehand was strongly and lastingly linked with how well they did.

Is change talk an active ingredient?

Where motivational interviewing most importantly built on Carl Rogers' work was its focus on "evoking and strengthening the client's own verbalized motivations for change" ('change talk'), and this it succeeds in doing. For the next link in the original theory of motivational interviewing – that hearing oneself commit to change is itself an active ingredient in creating that change – the featured study offers less support.

Its most robust finding – statistically significant for both the first and second sessions – was that motivational interviewing generated statements more strongly committed to change than did non-directive counselling, the expected effect of therapist endeavours to engineer this result which were banned in the non-directive option. But this did not mean that over the course of therapy, *actual* change was any greater after motivational interviewing.

In this study, strongly committed change talk was engineered in a situation where due to random allocation everything else was held constant, including any pre-existing differences between patients and therapists. In other studies where this level playing field was not assured, change talk has emerged as a stronger predictor of later substance use, over and above what might have been predicted from the client's substance use before they started treatment.

This pattern of findings suggests that change talk is not always a *cause* of substance use reductions, but can simply be how intention to reduce is expressed when therapists try to generate such expressions. Even if they don't try (as in the non-directive option in the featured study), the intention may still be there as one reason why the client sought help, and/or be bolstered by what happens in therapy or in the study. In non-directive counselling the client may not strongly express this intention because there are no 'demands' on them to do so by the therapist, but it may still be there and translate in to equivalent substance use reductions. In 2009 a reformulation of motivational interviewing theory from William Miller and colleague was consistent with this view, speculating that change talk was not active in itself "but represents a signal that the covert events are occurring and that change is likely to follow".

Most in line with motivational interviewing theory were the unplanned analyses of what happened during and after the first session. Even here, the initially steeper drop in drinking over the week after the motivational session was slight and failed to reach statistical significance, as (narrowly) did the link between drinking and the strength of the client's commitment to change at the end of that

session. These non-significant (so possibly chance) findings plus the post-hoc nature of the analysis, mean that the suggestion that change talk accounted for the early impact of motivational interviewing needs further and pre-planned testing before it can be relied on.

If real, a greater impact of motivational interviewing and evidence for its mechanism of change after the first session would 'make sense', because this is where the bulk of the work hopefully leading to commitment to change was intended to happen, including more extensive and elaborated feedback comparing the client's drinking with US norms. The next session is (according to the manual on which the programme was based) largely for tying up loose ends, and the last two act as boosters. This extra impetus was not sustained, but not because by then the clients had cut their drinking as much as they wanted to; after therapy ended, they further reduced. Perhaps instead clients relieved of therapist pressure reverted to the course they had started by seeking help in the first place.

These findings are consistent with the more active stance of motivational interviewing producing slightly more rapid commitment to change and change itself than allowing things to develop at their own pace through non-directive listening. If this is the case, it helps explain why though the approach is no more effective than other well structured approaches, it does on average take considerably less time to achieve the same results.

Hard to divorce relationships from activities

Carl Rogers (see above) saw the impossibility of divorcing therapeutic techniques and activities from the interpersonal qualities he advocated, because techniques are a vehicle for communicating these qualities, without which they cannot impact on the client. In 2011 experts commissioned by the American Psychological Association went further, declaring that "we cannot imagine any treatment methods that would not have some relational impact ... treatment methods *are* relational acts [and] the value of a treatment method is inextricably bound to the relational context in which it is applied" (emphasis added). The argument is that techniques won't work unless the relationship is good, and techniques are the relationship in action, expressing and communicating it and deepening or disrupting it.

Some of the most important of these techniques – reflective listening and asking open-ended questions – were allowed to the non-directive therapists, but others were banned including activities like decisional balance exercises, 'motivation rulers', and reflections clearly elaborated in ways intended to nudge the patient towards commitment to change. What did this do to the relationship? From the patient's point of view, remarkably little.

Compared to clients seeing motivational therapists, as assessed after session two they were aware that therapists were being relatively non-directive, but felt they had been almost (not quite) as helpful, and the bond they had formed with the therapist was just as solid. Observers rating the sessions also clearly divined that the motivational therapists were doing much more to direct the patient and evoke and reinforce change talk, but felt they were no more empathic or supportive, and no more respectful of the client's autonomy.

But another relational attribute on which there was also expected to be no difference was in fact rated significantly more apparent in the motivational sessions – collaboration with the client. Seemingly this was because motivational therapists were free to (and did) engage in joint change-directed activities. This plus the slight deficit in helpfulness perceived by the clients seem signs that the partial deprivation of therapeutic methods imposed on non-directive therapists did affect the relationship. The detriment to collaboration and (though not assessed) a presumed associated deficit in agreeing on the goals of therapy, could themselves account for the initially slightly less steep reductions in drinking achieved by clients in non-directive therapy.

Close supplementary text

For more on the mechanisms and processes involved in motivational interviewing run this search of the Effectiveness Bank site.

Thanks for their comments on this entry in draft to research author Jon Morgenstern of the National Center on Addiction and Substance Abuse at Columbia University in the USA, and Tim Leighton of the Centre for Addiction Treatment Studies of Action on Addiction. Commentators bear no responsibility for the text including the interpretations and any remaining errors.

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