

BRIEF ALCOHOL INTERVENTIONS: DO COUNSELLORS' AND PATIENTS' COMMUNICATION CHARACTERISTICS PREDICT CHANGE?

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Abstract — **Aims:** To identify communication characteristics of patients and counsellors during brief alcohol intervention (BAI) which predict changes in alcohol consumption 12 months later. **Methods:** Tape-recordings of 97 BAI sessions with hazardous drinkers were analysed using the Motivational Interviewing Skill Code (MISC). Outcome measures were (i) baseline to a 12-month difference in the weekly drinking quantity, and (ii) baseline to a 12-month difference in heavy drinking episodes per month. Bivariate analyses were conducted for all MISC measures, and significant variables were included in multiple linear regression models. **Results:** Patient communication characteristics (ability to change) during BAI significantly predicted the weekly drinking quantity in the multiple linear regression model. There were significant differences for some of the counsellor skills in bivariate analyses but not in the multiple regression model adjusting for patients' talk characteristics. Changes in heavy drinking showed no significant association with patient or counsellor skills in the multiple linear regression model. **Conclusion:** Findings indicate that the more the patient expresses ability to change during the intervention, the more weekly alcohol use decreases. The role of the counsellor during the interaction, and influence on the outcomes was not clearly established. Implications for BAI and related research are discussed.

INTRODUCTION

Brief alcohol interventions (BAI) have been associated with approximately 20% decrease in alcohol consumption, and are often as effective as more intensive treatments (Bien *et al.*, 1993; Dunn *et al.*, 2001; D'Onofrio and Degutis, 2002; Emmen *et al.*, 2004; Bertholet *et al.*, 2005). Although evidence for the efficacy of BAI is accumulating, little is known about how it works and which counsellor and patient communication characteristics are most effective for triggering behaviour changes. So far, the main contribution to the literature in this field has been the identification of six common factors used in effective brief intervention trials, summarized under the acronym FRAMES (Bien *et al.*, 1993; Miller and Sanchez, 1993): Feedback regarding personal risk or impairment, emphasis on personal Responsibility for change, clear Advice to change, a Menu of alternative change options, therapeutic Empathy as a counselling style, and enhancement of client Self-efficacy or optimism. The authors demonstrated that these six factors were present in effective brief interventions, but did not evaluate their role in stimulating patient change. So far, the communication characteristics of counsellors and patients during BAI have not been empirically tested.

BAI generally incorporates a motivational interviewing (MI) style and techniques for use in time-limited health-care settings (Noonan and Moyers, 1997; Dunn *et al.*, 2001; Burke *et al.*, 2003; Vasilaki *et al.*, 2006). It typically includes such MI components as adopting an empathic and non-confrontational style, asking open questions, affirming, summarizing, asking permission, encouraging patient choice and responsibility in decision making, providing advice, reflective listening, variation in depth of reflections, eliciting change talk, and rolling with resistance (Rollnick *et al.*, 2002). But

even for MI, little is known about what specifically works during therapeutic sessions.

Miller *et al.* (1993) showed that a directive-confrontational counselling style created a lot of resistance in clients, which in turn predicted fewer reductions in drinking 1 year later. The Motivational Interviewing Skill Code (MISC) was developed to better quantify and qualify clinical interactions (Miller, 2000; Miller *et al.*, 2003). This instrument quantifies communication characteristics and behaviours of counsellors and patients during MI sessions by analyzing video or tape-recordings. Moyers *et al.* (2005) found that therapist interpersonal skills (assessed by the MISC) were positively associated with patient involvement during MI sessions. Patient language during MI was studied by Amrhein *et al.* (2003) and the commitment strength of patients was described as predicting favourable drug use outcomes such as numbers of days abstinent. This research led to the revision of coding for patient behaviours in the second version of the MISC (Miller *et al.*, 2003). Recent research showed that MI-consistent therapist behaviours were more often followed by patient self-motivational statements, whereas MI-inconsistent behaviours were more likely to elicit patient resistance (Moyers and Martin, 2006).

To date, there has been no attempt to investigate if the MISC can be used to explain which of the many facets of communication between counsellors and patients predict behaviour change through BAI. Thus, the purpose of this study is to document patient and counsellor behaviour during BAI sessions, and to identify communication characteristics that predict alcohol use changes.

METHODS

Study design

This study was a secondary analysis of data from a randomized controlled trial conducted in the emergency department

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(ED) of Lausanne University Hospital, Lausanne, Switzerland, aimed at evaluating the efficacy of BAI in decreasing hazardous alcohol consumption at 1-year follow-up (Daepfen *et al.*, 2007). The protocol was approved by the Ethics Committee of Lausanne University Hospital. There were 8833 patients attending the ED for general reasons who were screened, and of these, 1366 were positive for hazardous alcohol consumption. This was defined, according to NIAAA standards, as men under 65 years old who drink more than 14 drinks per week, or more than four drinks on a single occasion in the past 30 days, and men over 65 years old and women who drink more than seven drinks per week or more than three drinks on a single occasion. One drink was defined as a regular glass of wine, a regular beer, or a single shot of spirit, straight or mixed with a soft drink, containing about 10–12 g of pure alcohol. Both variables, namely, weekly quantity of drinking and frequency of heavy episodic drinking were used as outcome measures. After signing informed consent, 486 patients were randomized to a BAI group and 880 to two control groups. Of these subjects, 1055 were successfully followed-up at 12 months (367 in the BAI group and 688 in control groups).

The experimental group received a single motivational style BAI (Zweben *et al.*, 2005) lasting approximately 15 min that included six steps:

- (1) Thank the patient for participation, reassure the patient about confidentiality.
- (2) Provide feedback about individual alcohol use as compared to similar measures for men and women in the Swiss community, and ask the patient for their opinion on the feedback.
- (3) Ask the patient to explore the pros and cons of their alcohol use.
- (4) On a 1–10 scale, explore the importance and readiness to change the drinking pattern of each patient.
- (5) Ask if the patient feels ready to set an objective, and provide positive reinforcement about individual ability to achieve this objective.
- (6) Give each patient written material about their Alcohol Use Disorders Identification Test (AUDIT) score (Saunders *et al.*, 1993), drinking pattern percentiles compared within the Swiss community, and drinking objectives.

Counsellors were six masters-level psychologists and one experienced nurse; all seven had a minimum of 1 year of clinical practice. A senior physician and a psychologist experienced in teaching MI and BAI trained the counsellors, first, with a 2-day workshop on MI containing exercises aimed at improving performance using an active, empathic listening style that minimizes confrontation (Baer *et al.*, 2004), and second, with a 5-day workshop focused on trial information procedures as well as on practice of the 6-step standardized BAI. Supervision was ongoing during the project, either in the presence of patients or through tape-recordings of the BAI.

Tape-recording and coding

Between June 2003 and June 2004, all consecutive BAI sessions were tape-recorded when patient consent was obtained,

resulting in 166 recordings. 97 of these were eligible for coding and analyses. Excluded were 33 lost to follow-up, 25 with incomplete records, 7 with mismatched identification codes, 3 who were not sufficiently fluent in French, and 1 whose wife intruded during the session. Two masters-level psychologists independently carried out coding of the 97 tape-recordings, blinded to assessment and follow-up data; both were trained in MI and in using MISC version 2.0 (Miller *et al.*, 2003). MISC training consisted of simultaneous then independent coding of a BAI sessions with discrepancies resolved by an expert. Training lasted until the inter-rater reliability was sufficient for each code. Simultaneous coding meetings with discrepancies resolved by an expert were ongoing during the coding period on a weekly base. Sessions used during training were those excluded so that none of the sessions used in the present study were used for training.

The MISC data is comprised of global ratings and behaviour counts. Two passes were made through each tape-recorded session. The first, uninterrupted pass assessed global ratings. The coder listened the whole session and then assigned a number on a 7-point Likert scale from 1 (low) to 7 (high) on each of four dimensions: counsellor level of *acceptance*, *empathy* and *MI spirit*, and patient degree of *self-exploration*. Counsellor global ratings are intended to capture the rater's overall impression of counsellor performance during the interview. Patient behaviour may change markedly over the course of a single session, thus global patient rating reflects the highest level of self-exploration period during this session, rather than the average for the entire session.

The second pass through the tape-recordings assigned specific behaviour counts. The coder listened to the session and categorized each counsellor and patient utterance with one of the proposed code. There are 19 categories of counsellor behaviour in the MISC 2.0: *advise with permission*, *advise without permission*, *affirm*, *confront*, *direct*, *emphasize control*, *facilitate*, *filler* (i.e. salutations, pleasantries, etc.), *giving information*, *closed question*, *open question*, *raise concern with permission*, *raise concern without permission*, *simple reflections*, *complex reflections*, *reframe*, *structure*, *support*, and *warn*. Counsellor scores for behaviour counts are the frequencies of each behaviour category during the session. *Advise with permission*, *affirm*, *emphasize control*, *open question*, both kind of *reflects*, and *support* are described as MI-consistent skills; *advise without permission*, *confront*, *direct*, *raise concern without permission*, and *warn* are described as MI-inconsistent skills; *facilitate*, *filler*, *giving information*, *closed question*, *raise concern with permission*, and *structure* are neutral skills. An expert level in MI implies using twice as many reflects than questions, twice as many complex than simple reflects, and having 70% of questions being open (Miller, 2000). Patient behaviour is categorized into six kinds of 'change talk' (i.e. inclination toward, or away from, the target behaviour change): (i) *Ability or inability to change*, (ii) *Commitment to change or not to change*, (iii) *Desire to change or not to change*, (iv) *Need to change versus lack of need to change, or a need not to change*, (v) *Reasons to change or reasons not to change*, and (vi) *Taking steps toward or away from change*. After categorization, each utterance is assigned a strength value ranging from +5 (strong inclination toward change) to -5 (strong inclination away from change).

Patient behaviour also includes *neutral or following* utterances (no inclination or link with the target behaviour change) as well as patient *questions*. Patient scores are the average strength of each of the six kinds of change talk as proposed by Amrhein *et al.* (2003) and the frequency of *neutral/following* utterances and *questions*.

Data analyses

Socio-demographic characteristics, baseline and follow-up alcohol consumption data were used to compare MISC-coded BAI to non-coded BAI groups to determine if the coded findings could be generalized to the whole BAI group. Pearson's chi-square test was used for categorical variables, while Wilcoxon's W non-parametric test was used for continuous variables since asymmetric distributions and non-equality of variances between groups were frequently observed. As suggested by Moyers *et al.* (2003), intra-class correlations (ICC), were used to measure inter-rater reliability between the two coders. We used the ICC absolute agreement, two-way, mixed-effects model. ICC were categorized according to Cicchetti (1994) as excellent (0.75 and above), good (0.60–0.74), fair (0.40–0.59), and poor (less than 0.40). As the two coders independently coded each of the 97 sessions, MISC data were then averaged between coders. Descriptive statistics (mean, standard deviation, minimum and maximum) for each MISC variable were computed to globally describe BAI. Kendall's tau-b correlations were computed between MISC measures and two outcomes (i) baseline to a 12-month difference in weekly drinking quantity, and (ii) baseline to a 12-month difference in heavy drinking episodes per month. Variables with significant bivariate associations ($P < 0.05$) were then included in multiple linear regression models with robust standard error to take into account issues concerning heterogeneity and lack of normality. These analyses were adjusted by age, sex, and alcohol-use severity (using an AUDIT score >12) to see which variables performed best in the context of other potential predictors of behaviour change; the variables controlled for were selected on the basis of both their clinical significance and their role in prior research suggesting that certain subgroups of patients were more likely to benefit from BAI (Fleming, 1993; Smith *et al.*, 2003; Spirito *et al.*, 2004; Bazargan-Hejazi *et al.*, 2005). All analyses were carried out using SPSS 14.0, except multiple linear regression analyses carried out using Stata 9.2.

RESULTS

Patient characteristics and alcohol consumption data

There were no significant differences between MISC-coded BAI and non-coded BAI samples on socio-demographic, AUDIT scores, alcohol consumption variables, or hazardous drinking criteria indicating that these two groups were similar in makeup and background, and similar on baseline and follow-up drinking outcomes (Table 1).

Inter-rater reliability

MISC variables mean scores for the two coders, and ICC values and categorization according to Cicchetti (1994) are

presented in Table 2. Inter-rater reliability was globally good. Only four variables had poor reliability (*confront*, *structure*, *warn*, and *desire to change or not to change*). These variables remained included in further analyses for exploratory reasons. In the 97 tape-recordings there were less than 5 utterances observed in the *direct*, *facilitate*, *filler*, *raise concern with permission*, *raise concern without permission*, and *reframe* categories; therefore, ICCs were inapplicable, extremely low or extremely high.

Counsellor and patient communication characteristics during BAI

Descriptive statistics (mean, SD, and range) for MISC variables are presented in Table 2. Global ratings of counsellor performance indicated satisfactory levels of *acceptance*, *empathy* and *MI spirit*. Counsellor behaviour counts showed that counsellors often asked questions, reflected patient statements or gave information; they asked questions about as much as they reflected and were more likely to ask open rather than closed questions, and used more of the simple than the complex reflections. On average, counsellors affirmed inclination toward change by patients about four times per BAI, and gave advice (with permission of the patient) and emphasized patient control and supported patients less often. There were few MI-inconsistent techniques (advice without permission, confrontations, and warnings) observed. In general, the global performance of counsellors was motivational to some extent, i.e. counsellors affirming and reflecting well, asking open questions, and using MI-inconsistent skills sparingly, but asking many questions, making many simple reflections, and using few other MI-consistent skills. Less than 5 utterances were observed in the *direct*, *facilitate*, *filler*, *raise concern with permission*, *raise concern without permission*, and *reframe* categories. This can be explained by interviewers' skills: counsellors were strictly trained not to use *direct* statements (i.e. give an order, command, or direction) and not to *raise concern with* or *without permission*, and achieved well in this task on one hand; on the other hand, to *reframe* seemed to be a skill that was not mastered by the counsellors. *Filler* is assigned for pleasantries and salutations, and as counsellor and patient already interacted during assessment procedures, those were not recorded. *Facilitate* statements (e.g. 'Mm hmm', 'I see') apparently have not been distinguished by the coders. These five variables were excluded from further analyses.

Patient global ratings indicated a fair degree of self-exploration. Average change talk strengths showed a global inclination not to change. Negative values were found for *commitment to change or not to change*, *desire to change or not to change*, *need to change versus lack of need to change or a need not to change*, and *reasons to change or not to change*. *Desire not to change* was particularly strongly expressed. Another observed trend was that some patients declared having already begun to change their own alcohol consumption (*taking steps toward change*). Globally, they perceived themselves as having the *ability to change*. Other patient behaviour counts showed a great number of *neutral and following* utterances (i.e. not linked to an alcohol theme) but only few *questions* asked.

Table 1. Patient socio-demographic information and alcohol consumption data. Comparison between the coded interventions and the non-coded interventions samples among patients with BAI who completed a 12-month follow-up ($N = 367$)

	Coded ($N = 97$)	Non-coded ($N = 270$)	P
<i>Demographic data</i>			
Age, mean (SD)	38.4 (17.1)	39.7 (16.9)	0.42
Sex, % male (N)	80.4 (78)	74.1 (200)	0.21
Country of origin, % Switzerland (N)	64.6 (62)	72.8 (195)	0.13
Education, % college degree (N)	30.5 (29)	36.8 (95)	0.27
Occupation, % employed (N)	57.7 (56)	62.6 (169)	0.40
<i>Alcohol use severity</i>			
% AUDIT score >12 (N)	21.1 (20)	17.4 (46)	0.42
<i>Weekly drinking quantity</i>			
Baseline, mean (SD)	13.4 (10.2)	12.8 (11.7)	0.45
12-month follow-up, mean (SD)	11.8 (13.3)	10.5 (11.3)	0.72
Baseline to follow-up difference, mean (SD)	1.5 (11.5)	2.3 (10.5)	0.98
<i>Heavy drinking episodes per month</i>			
Baseline, mean (SD)	4.3 (6.2)	4.4 (6.8)	0.65
12-month follow-up, mean (SD)	4.7 (7.5)	3.3 (5.3)	0.30
Baseline to follow-up difference, mean (SD)	- 0.4 (6.0)	1.1 (7.4)	0.18
<i>Hazardous alcohol consumption criteria</i>			
% weekly criterion at baseline (N) ^a	41.2 (40)	40.1 (108)	0.85
% heavy drinking criterion at baseline (N) ^b	90.6 (87)	93.3 (252)	0.38
% at least one criterion at baseline (N)	100.0 (97)	100.0 (270)	NA
% weekly criterion at 12-month follow-up (N) ^a	25.8 (25)	25.9 (70)	0.98
% heavy drinking criterion at 12-month follow-up (N) ^b	74.2 (72)	71.5 (193)	0.60
% at least one criterion at 12-month follow-up (N)	77.3 (75)	74.4 (201)	0.57

NA, Not Applicable.

^a Weekly criterion: >14 drinks per week (males under 65 years old) or >seven drinks per week (males over 65 years old, and females).

^b Heavy drinking criterion: >four drinks on a single occasion in the past 30 days (males under 65 years old) or >three drinks on a single occasion in the past 30 days (males over 65 years old, and females).

Weekly drinking quantity

Correlations between MISC data and the baseline to a 12-month difference in weekly drinking quantities are shown in Table 3. Two variables were significantly correlated with the outcome. These were counsellor level of *empathy* and patient average expression strength in *ability/inability to change*. Both variables followed the expected direction, i.e. high *empathy* level and strength in *ability to change*, correlated with greater weekly alcohol use decrease.

When introduced in multiple linear regression model adjusted for age, sex, and alcohol-use severity using AUDIT score >12 (Table 4), only patient *ability/inability to change* remained significant, indicating that patient's expressed strength to be able to change predicted decrease in alcohol use.

Heavy episodic drinking

Table 3 also shows correlations between MISC data and heavy episodic drinking (baseline to a 12-month difference in the number of heavy drinking episodes per month). Five variables were significant: counsellor level of *empathy* and frequency of *advise with permission* and *affirm*, and patient average strength in *ability/inability to change*, and in *taking steps toward change/away from change*. All variables followed the expected direction, i.e. counsellors' increasing levels in *empathy*, and frequency of *affirm* and *advice with permission*,

and patients' increasing average strength in *ability/inability to change*, and *taking steps toward change/away from change* were associated with decreasing number of heavy drinking episodes.

In the multiple linear regression model adjusting for age, sex, and alcohol use severity using AUDIT score >12 (Table 4), no variable was significant.

DISCUSSION

The goals of this study were to describe the content of BAI and to find those elements of counsellor and patient language that predicted change in alcohol consumption 1 year later. Counsellors globally adopted a motivational counselling style even if there was room for improvement in the use of specific skills, while patient language showed a global inclination not to change. Some counsellor and patient variables were correlated with change and those were all in the expected direction, i.e. counsellors using more motivational skills and patients expressing more inclination toward change were related to a greater decrease in alcohol use. When introduced in multiple regression analyses, change in the weekly drinking quantity was predicted by the patient's *ability to change* expression, and change in heavy drinking showed no significant association with MISC variables.

Table 2. MISC variables: mean scores for the two coders, ICC values, ICC categorization, and between coders, mean, and range

		Coder 1 mean (SD)	Coder 2 mean (SD)	ICC absolute agreement	ICC categorization	Mean (SD)	Range
Counsellor behaviours	<i>Global Ratings (Likert scale 1–7)</i>						
	Acceptance	5.7 (0.9)	6.1 (0.7)	0.53	Fair	5.9 (0.7)	3.5–7.0
	Empathy	5.5 (0.8)	5.5 (0.7)	0.50	Fair	5.5 (0.7)	3.5–6.5
	MI Spirit	5.4 (0.8)	5.6 (0.7)	0.53	Fair	5.5 (0.7)	3.0–6.5
	<i>Behaviour counts (frequencies)</i>						
	Advise with permission	0.7 (1.2)	0.7 (0.9)	0.66	Good	0.7 (1.0)	0.0–4.5
	Advise without permission	0.5 (0.8)	0.2 (0.5)	0.48	Fair	0.4 (0.6)	0.0–2.5
	Affirm	4.1 (2.6)	3.7 (2.4)	0.75	Excellent	3.9 (2.3)	0.0–11.0
	Confront	0.8 (1.3)	0.2 (0.6)	0.22	Poor	0.5 (0.8)	0.0–4.0
	Direct	0.0 (0.0)	0.0 (0.0)	NA	NA	0.0 (0.0)	0.0–0.0
	Emphasize control	0.6 (1.0)	0.7 (1.0)	0.75	Excellent	0.6 (0.9)	0.0–4.0
	Facilitate	0.0 (0.0)	0.0 (0.0)	NA	NA	0.0 (0.0)	0.0–0.0
	Filler	0.0 (0.1)	0.0 (0.0)	0.00	Poor	0.0 (0.1)	0.0–0.5
	Giving information	11.1 (4.8)	10.8 (4.2)	0.83	Excellent	10.9 (4.3)	3.5–36.5
	Question closed	9.3 (5.0)	7.7 (3.8)	0.65	Good	8.5 (4.1)	2.5–19.0
	Question open	8.7 (3.4)	9.8 (3.7)	0.82	Excellent	9.3 (3.4)	2.5–19.5
	Raise concern with permission	0.0 (0.1)	0.0 (0.2)	0.75	Excellent	0.0 (0.2)	0.0–1.5
	Raise concern without permission	0.0 (0.0)	0.0 (0.0)	NA	NA	0.0 (0.0)	0.0–0.0
	Reflect simple	9.3 (4.4)	9.3 (4.1)	0.60	Good	9.3 (3.8)	2.5–21.0
	Reflect complex	8.3 (4.3)	7.5 (3.8)	0.56	Fair	7.9 (3.6)	1.0–17.5
	Reframe	0.0 (0.0)	0.0 (0.2)	0.00	Poor	0.0 (0.1)	0.0–1.0
	Structure	2.5 (1.3)	2.7 (1.2)	0.36	Poor	2.6 (1.1)	1.0–5.5
	Support	0.5 (1.1)	0.3 (0.9)	0.61	Good	0.4 (0.9)	0.0–5.0
Warn	0.4 (1.2)	0.3 (0.8)	0.37	Poor	0.3 (0.8)	0.0–5.5	
Patient behaviours	<i>Global rating (Likert scale 1–7)</i>						
	Self-exploration	5.2 (0.9)	5.2 (0.9)	0.62	Good	5.2 (0.8)	2.5–7.0
	<i>Average change talk strength (+5 to –5)</i>						
	Ability/inability to change	0.5 (1.3)	0.6 (1.2)	0.57	Fair	0.5 (1.1)	–2.6–2.7
	Commitment to change or not to change	0.1 (1.7)	–0.3 (2.0)	0.70	Good	–0.1 (1.7)	–4.0–3.5
	Desire to change or not to change	–1.7 (1.5)	–1.4 (1.7)	0.38	Poor	–1.6 (1.3)	–3.3–2.5
	Need to change/lack of need to change, or a need not to change	–0.2 (1.8)	–0.1 (1.9)	0.62	Good	–0.1 (1.7)	–3.8–3.8
	Reasons to change or not to change	–0.2 (0.9)	–0.2 (0.7)	0.75	Excellent	–0.2 (0.8)	–2.0–1.6
	Taking steps toward change/away from change	1.4 (1.1)	1.0 (1.2)	0.45	Fair	1.2 (1.0)	–1.3–3.3
	<i>Behaviour counts (frequencies)</i>						
	Neutral/follow	19.9 (16.2)	22.2 (13.1)	0.71	Good	21.1 (13.6)	5.0–71.0
	Questions	1.0 (2.0)	0.9 (1.5)	0.77	Excellent	0.9 (1.6)	0.0–10.0

NA, Not Applicable.

Differences in the associations of BAI content with the two outcomes were interesting. Weekly drinking outcome was predicted by communication characteristic observed during BAI, while heavy drinking episodes outcome was not. Some factors not measured in the present study may be more influential in modifying heavy drinking. Perhaps heavy episodic alcohol use is a fluctuating, unstable behaviour, making changes following BAI difficult to detect by examining only the communication characteristics of counsellors and patients.

Strength of change talk best predicts weekly drinking outcome. This could be expected from MI theory (Miller and Rollnick, 2002), though process research on MI only recently established patient change talk as predictive of outcome changes. For example, Amrhein *et al.* (2003) empirically demonstrated the importance of patient commitment to change strength in triggering change. In agreement, the present study

shows that in BAI sessions some patient communication characteristics are indeed predictive of change. However, we observed change predicted by ability to change and not commitment to change, as found by Amrhein *et al.* (2003). Brief interventions conducted in settings such as EDs are more impersonal than in primary care and inpatient or outpatient treatment program settings (e.g. only a one-time contact with an unknown counsellor vs regular follow-up), and might make commitment given less important than the patient's own feelings about ability to change.

Counsellor skills and communication characteristics of patients were both expected to be instrumental in changing drinking outcomes, so the failure of counsellor skills to show significant effects in the regression models was surprising. Several of the counsellor skills were initially related to outcome at the bivariate level, but lost significance once

Table 3. Correlations between MISC data and alcohol use outcomes

		Weekly drinking quantity (baseline to a 12-month difference)		Heavy drinking episodes per month (baseline to a 12-month difference)		
		Kendall tau-b	P value	Kendall tau-b	P value	
Counsellor behaviours	<i>Global ratings (Likert scale 1–7)</i>					
		Acceptance	0.05	0.52	0.12	0.11
		Empathy	0.16	0.04	0.18	0.03
		MI spirit	0.13	0.10	0.14	0.09
		<i>Behaviour counts (frequencies)</i>				
		Advise with permission	0.11	0.17	0.15	0.05
		Advise without permission	0.03	0.71	–0.07	0.40
		Affirm	0.07	0.32	0.21	0.005
		Confront ^a	–0.08	0.33	–0.15	0.07
		Emphasize control	0.02	0.78	0.06	0.45
		Giving information	–0.02	0.79	–0.03	0.64
		Question closed	–0.03	0.72	–0.07	0.36
		Question open	–0.08	0.27	–0.07	0.36
		Reflect simple	0.02	0.82	0.06	0.39
		Reflect complex	0.08	0.26	0.05	0.53
		Structure ^a	–0.04	0.63	–0.04	0.62
		Support	–0.02	0.83	–0.04	0.66
		Warn ^a	0.10	0.22	0.07	0.37
	Patient behaviours	<i>Global rating (Likert scale 1–7)</i>				
		Self-exploration	0.02	0.84	0.05	0.54
		<i>Average change talk strength (+5 to –5)</i>				
		Ability/inability to change	0.21	0.005	0.17	0.02
		Commitment to change or not to change	0.11	0.11	0.05	0.51
		Desire to change or not to change ^a	0.01	0.85	0.00	0.97
		Need to change/lack of need to change or a need not to change	0.01	0.90	0.01	0.90
		Reasons to change or not to change	–0.01	0.93	0.07	0.34
		Taking steps toward change/away from change	0.01	0.88	0.21	0.004
		<i>Behaviour counts (frequencies)</i>				
		Neutral/follow	0.00	0.97	0.04	0.60
		Questions	0.11	0.14	0.02	0.79

^a Variable with poor inter-rater reliability. Considered only for exploratory reasons.

patient characteristics and adjustment variables were added to the models. For example, counsellor *empathy* was strongly related with both outcomes in the bivariate analyses, and carries large theoretical support in the MI literature (Bien *et al.*, 1993; Miller and Rollnick, 2002), but did not perform well in predicting positive change in the regression models. A plausible explanation for this might be that counsellor skills are correlated with patient change talk expressions, and partly depend on patient behaviours and their effect on the counsellor. These might be subtle reactions to positive change talk from patients. This might also be that counsellor communication characteristics influenced the patient, but that in the end, the patient's own impression about change was the most important. Future research should, thus, consider trying to determine whether motivational behaviours precede or follow positive change talk utterances during BAI sessions.

Despite several strengths such as a large sample size for this kind of analyses, good global inter-rater agreement, and

no differences in socio-demographic and alcohol consumption data between coded and non-coded patients allowing generalization to the main BAI sample, several potential limitations should be taken into account. The MISC instrument was designed for analyses of MI, not BAI, although common skills and a common target (behaviour change) of MI and BAI suggest that the MISC might well be used to study BAI content. Using the MISC in French might also be a concern as it is a linguistic coding instrument, developed in English and so far not validated in French. Another limitation might arise due to the nature of EDs, where time and medical constraints are quite different than those found in other settings (e.g. primary care), and might lead to specific behaviours and attitudes that unduly influence BAI. Self-selection bias may have been introduced by assessing only those patients who were willing to participate and have their data recorded, and to cooperate with a follow-up 1 year later.

Table 4. Robust linear regression models

Weekly drinking quantity (baseline to a 12-month difference)			
	B	Robust Std. Err.	P value
Constant	-19.29	14.26	0.18
<i>Adjustment variables</i>			
Age	0.00	0.07	0.96
Sex	-0.03	1.49	0.98
AUDIT score >12	1.17	3.80	0.76
<i>Counsellor behaviours</i>			
Empathy (Likert scale 1-7)	3.48	2.19	0.12
<i>Patient behaviours</i>			
Ability/inability to change (average strength)	2.78	1.41	0.05
Heavy drinking episodes per month (baseline to a 12-month difference)			
Constant	-4.99	7.26	0.49
<i>Adjustment variables</i>			
Age	0.02	0.03	0.56
Sex	0.90	0.94	0.34
AUDIT score >12	1.05	2.46	0.67
<i>Counsellor behaviours</i>			
Empathy (Likert scale 1-7)	-0.09	1.39	0.95
Advise with permission (frequency)	0.06	0.69	0.93
Affirm (frequency)	0.48	0.28	0.09
<i>Patient behaviours</i>			
Ability/inability to change (average strength)	0.39	0.72	0.59
Taking steps toward change/away from change (average strength)	0.87	0.78	0.27

Another caveat is that we did not measure patient level of readiness to change before intervention. This might have permitted us to distinguish between what arose from the interaction and what came from the patient's prior level of motivation. Future research should take this into account and introduce level of motivation as part of baseline assessment measures.

Nonetheless, using the MISC to describe BAI content appeared as a promising approach. It provides a description of the communication content of BAI and some clues as to how this might help predict changes in drinking outcome. The present study suggests that the more the patient expresses ability to change during the intervention, the more the alcohol use will decrease. If the role of the counsellor is still not clearly established, this does not diminish in any case the importance of BAI, since an environment where patients can begin to think and talk about changes may be critical. Further research is needed to stress BAI content as a sequence in order to better understand the relationship between counsellor and patient communication characteristics at each step of the intervention course. Refining the instrument itself, perhaps by adapting it to certain specific features of BAI and by creating summary measures that correspond clearly to BAI content, could potentially be of great use.

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REFERENCES

- Amrhein, P. C., Miller, W. R., Yahne, C. E. *et al.* (2003) Client commitment language during motivational interviewing predicts drug use outcomes. *Journal of Consulting and Clinical Psychology* **71**, 862-878.
- Baer, J. S., Rosengren, D. B., Dunn, C. W. *et al.* (2004) An evaluation of workshop training in motivational interviewing for addiction and mental health clinicians. *Drug and Alcohol Dependence* **73**, 99-106.
- Bazargan-Hejazi, S., Bing, E., Bazargan, M. *et al.* (2005) Evaluation of a brief intervention in an inner-city emergency department. *Annals of Emergency Medicine* **46**, 67-76.
- Bertholet, N., Daepfen, J.-B., Wietlisbach, V. *et al.* (2005) Reduction of alcohol consumption by brief alcohol intervention in primary care: systematic review and meta-analysis. *Archives of Internal Medicine* **165**, 986-995.
- Bien, T. H., Miller, W. R. and Tonigan, J. S. (1993) Brief interventions for alcohol problems: a review. *Addiction* **88**, 315-335.
- Burke, B. L., Arkowitz, H. and Menchola, M. (2003) The efficacy of motivational interviewing: a meta-analysis of controlled clinical trials. *Journal of Consulting and Clinical Psychology* **71**, 843-861.
- Cicchetti, D. V. (1994) Guidelines, criteria and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessment* **6**, 284-290.
- Daepfen, J.-B., Gaume, J., Bady, P. *et al.* (2007) Brief alcohol intervention and alcohol assessment do not influence alcohol use in injured patients treated in the emergency department: a randomized controlled clinical trial. *Addiction* **102**, 1224-1233.
- D'Onofrio, G. and Degutis, L. C. (2002) Preventive care in the emergency department: screening and brief intervention for alcohol problems in the emergency department: a systematic review. *Academic Emergency Medicine* **9**, 627-638.
- Dunn, C., Deroo, L. and Rivara, F. P. (2001) The use of brief interventions adapted from motivational interviewing

- across behavioral domains: a systematic review. *Addiction* **96**, 1725–1742.
- Emmen, M. J., Schippers, G. M., Bleijenberg, G. *et al.* (2004) Effectiveness of opportunistic brief interventions for problem drinking in a general hospital setting: systematic review. *BMJ* **328**, 318.
- Fleming, M. F. (1993) Screening and brief intervention for alcohol disorders. *Journal of Family Practice* **37**, 231–234.
- Miller, W. R. (2000) *Motivational Interviewing Skill Code (MISC) Coder's Manual*. [Online] Available at: <http://casaa.unm.edu/download/misc1.pdf>
- Miller, W. R., Benefield, R. G. and Tonigan, J. S. (1993) Enhancing motivation for change in problem drinking: a controlled comparison of two therapist styles. *Journal of Consulting and Clinical Psychology* **61**, 455–461.
- Miller, W. R., Moyers, T. B., Ernst, D. *et al.* (2003) *Manual for the Motivational Interviewing Skill Code (MISC) Version 2.0*. [Online] Available at: <http://casaa.unm.edu/download/misc.pdf>
- Miller, W. R. and Rollnick, S. (2002) *Motivational Interviewing: Preparing People for Change*, 2nd edn, Guilford Press, New York.
- Miller, W. R. and Sanchez, V. C. (1993) Motivating young adults for treatment and lifestyle change. In *Issues in Alcohol Use and Misuse by Young Adults*, Howard, G. ed., University of Notre Dame Press, Notre Dame, pp. 55–82.
- Moyers, T. B. and Martin, T. (2006) Therapist influence on client language during motivational interviewing sessions. *Journal of Substance Abuse Treatment* **30**, 245–251.
- Moyers, T., Martin, T., Catley, D. *et al.* (2003) Assessing the integrity of motivational interviewing interventions: Reliability of the motivational interviewing skills code. *Behavioural and Cognitive Psychotherapy* **31**, 177–184.
- Moyers, T. B., Miller, W. R. and Hendrickson, S. M. (2005) How does motivational interviewing work? Therapist interpersonal skill predicts client involvement within motivational interviewing sessions. *Journal of Consulting and Clinical Psychology* **73**, 590–598.
- Noonan, W. C. and Moyers, T. B. (1997) Motivational interviewing: a review. *Journal of Substance Misuse* **2**, 8–16.
- Rollnick, S., Allison, J., Ballasiotis, S. *et al.* (2002) Variations on a theme: Motivational interviewing and its adaptations. In *Motivational Interviewing: Preparing People for Change*, 2nd edn, Miller, W. R. and Rollnick, S. eds, Guilford Press, New York.
- Saunders, J. B., Aasland, O. G., Babor, T. F. *et al.* (1993) Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO collaborative project on Early detection of persons with harmful alcohol consumption—II. *Addiction* **88**, 791–804.
- Smith, A. J., Hodgson, R. J., Bridgeman, K. *et al.* (2003) A randomized controlled trial of a brief intervention after alcohol-related facial injury. *Addiction* **98**, 43–52.
- Spirito, A., Monti, P. M., Barnett, N. P. *et al.* (2004) A randomized clinical trial of a brief motivational intervention for alcohol-positive adolescents treated in an emergency department. *The Journal of Pediatrics* **145**, 396–402.
- Vasilaki, E. I., Hosier, S. G. and Cox, W. M. (2006) The efficacy of motivational interviewing as a brief intervention for excessive drinking: a meta-analytic review. *Alcohol and Alcoholism* **41**, 328–335.
- Zweben, A., Rose, S. J., Stout, R. L. *et al.* (2005) Case Monitoring and motivational style brief intervention. In *Handbook of Alcoholism Treatment Approaches*, 3rd edn, Hester, R. and Miller, W. R. eds, Allyn and Bacon, Boston, MA, pp. 113–130.