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Effect of a Significant Other on Client Change Talk in Motivational Interviewing

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Abstract

Objective—To examine significant-other (SO) and therapist behaviors as predictors of client change language within motivational interviewing (MI) sessions.

Method—Participants from an emergency department received a single session of MI that included SO participation ($N = 157$). Sessions were coded using therapy process coding systems. Sessions were subdivided into ten equal deciles to facilitate sequential analyses. Multilevel modeling was used to examine the relationships among the following variables: therapist MI-consistent and MI-inconsistent behavior; client change talk and sustain talk; SO Support Change and SO Against Change.

Results—Therapist MI-consistent and MI-inconsistent behaviors failed to predict either client change talk or sustain talk at the decile level. Global measures of therapist MI spirit and acceptance were associated with lower levels of client sustain talk ($p = .002$ and $p < .001$ respectively). Higher levels of SO Support Change were more likely to be followed by higher levels of client change talk ($p < .001$) and lower levels of client sustain talk ($p < .001$). SOs who engaged in behaviors that discouraged the patient's drinking in the six months prior to the intervention had higher levels of SO Support Change language ($p = .02$). When analyzed at the aggregate level, therapist behavior was significantly associated with client change talk, but effect sizes were quite modest.

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Conclusions—Within-session SO behavior impacts client verbalizations regarding changes in alcohol use. Results raise questions about the role of therapist behavior when an SO is present.

Keywords

Motivational Interviewing; therapy process; alcohol use; brief intervention; change language

Motivational interviewing (MI) is a counseling style designed to facilitate health behavior change. The approach has strong empirical evidence for its efficacy with a number of client populations and behaviors (Hettema, Steele, & Miller, 2005). However, the mechanisms through which MI exerts its therapeutic effects are unclear (Burke, Arkowitz, & Menchola, 2003), and have attracted increasing interest in recent years. Apodaca and Longabaugh (2009) recently examined mechanisms of change in MI across 19 treatment trials targeting alcohol or other drug use. The authors identified several potential mechanisms, including client language that communicates personal reasons for change and advantages of change ("change talk"). These communications are understood in terms of Bem's Self Perception Theory (1972) where verbalizations of intent become beliefs of intent, and may thus reflect an inter- and intrapersonal contract regarding behavior change (c.f., Miller & Rollnick, 2002).

Client change talk

Amrhein and colleagues (2003) were first to examine the relationship between client speech during an MI session and client behavior following an MI session, and found higher strength of pro-change language was associated with better substance use outcomes in the year following treatment. Subsequently, several researchers have replicated and extended the work of Amrhein and colleagues, examining the role of client language in the change process. Baer and colleagues (2008) studied within-session client language in relation to substance use outcomes among adolescents. The study found that change talk was associated with fewer days of substance use at 1-month assessment, and that sustain talk (language against change or in favor of continued substance use) was associated with greater substance use at follow-up. In other words, more change talk predicted better outcomes, while more sustain talk predicted poorer outcomes. The association between client language and substance use outcomes appears to be quite durable. For example, change talk has been correlated with better alcohol outcomes twelve months later in two studies (Gaume, Gmel, & Daeppen, 2008a; Moyers et al., 2007), while Walker and colleagues (2011) found change talk predicts superior drug use outcomes through a 34-month follow-up. In sum, emerging research supports client language as an important predictor of substance use outcomes following MI, and also point to its predictive role in other types of therapy, such as cognitive-behavioral therapy and twelve-step facilitation (Aharonovich, Amrhein, Bisaga, Nunes, & Hasin, 2008; Moyers et al., 2007).

How therapists evoke change talk

Given the ability of client change talk to predict outcomes, research has begun to examine how therapist behavior can elicit this type of client language in MI. This work has focused on therapist behaviors considered to be MI-consistent (e.g., complex reflections, affirming) and those that are MI-inconsistent (e.g., confrontation, giving advice without permission). Moyers and Martin (2006) conducted the first investigation of MI-consistent behaviors in relation to change talk using a sequential analysis of therapy sessions from Project MATCH (1998). Therapist MI-consistent behaviors were more likely to be immediately followed by client change talk, and MI-inconsistent behaviors were more likely to be followed by sustain talk. Guame and colleagues (2008b) also conducted a sequential analysis of hospital

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emergency department patients who received MI. They found that therapist MI-consistent behaviors were more likely to be followed by *both* client change talk and sustain talk, while therapist MI-inconsistent behaviors were less likely to be followed by change talk. Two other studies have found that therapist MI-consistent behavior is more likely to be followed by higher levels of both change talk and sustain talk (Vader, Walters, Prabhu, Houck, & Field, 2010; Gaume, Bertholet, Faouzi, Gmel, & Daeppen, 2010), with one of these studies also showing that MI-inconsistent language was followed by less change talk and more sustain talk (Gaume, et al., 2010). Finally, Moyers and colleagues (2009) have successfully linked these within-session processes to subsequent substance use outcomes. These researchers tested a causal chain whereby therapist MI-consistent behavior was predictive of client change talk, which in turn was predictive of total amount of drinking during treatment. Client change talk was found to mediate 30% of the relationship between MI-consistent behavior and total drinking during treatment.

Inclusion of significant others

It is unknown what role significant others (romantic partner, family member, friend) might play in this therapeutic process when they are included in motivational interviewing sessions. The importance of social networks and family members in facilitating behavior change is well-established in the addiction treatment literature (McCrady et al., 2006), which has provided a solid rationale for including concerned significant others in MI sessions. It has been shown that members of a drinker's social network can have both a positive and a negative impact on a drinker's change process (Beattie & Longabaugh, 1999). Yet, only a very small number of clinical trials of MI have attempted to include a significant other. For example, although the Project MATCH protocol encouraged clients to bring in a family member or close friend into one or two sessions of Motivational Enhancement Therapy (Miller, Zweben, DiClemente, & Rychtarik, 1992), an SO was only included in about 15% of MI sessions. In another MI study that used the Project MATCH manual as a guide, participants in the MI group requested that an SO participate in treatment in only 2 of 104 cases (Miller, Yahne, & Tonigan, 2003). Hence, while evidence suggests the potential utility of including SOs in MI sessions, little is known about the processes by which such inclusion is beneficial or harmful to patient outcomes.

Past studies have shown that brief MI interventions delivered opportunistically with hospital populations are effective in reducing alcohol use and/or associated consequences (Monti et al., 1999, Longabaugh et al., 2001; Schermer, Moyers, Miller, & Bloomfield, 2006). These interventions have been delivered almost exclusively in an individual format, but when individuals present to a medical setting they are often accompanied by a concerned partner, friend, or family member. Involvement of SOs is consistent with the MI conception of the importance of the social context in the process of change (Burke, Vassilev, Kantchelov, & Zweben, 2002). SOs in MI sessions may result in higher levels of change talk, because an SO can provide a perspective that motivates the drinker to change, affirms the drinker's skills for change, and helps to identify and support treatment goals (Miller et al., 1995). However, relationship dynamics and SO characteristics may have positive and negative influences on the therapy process, causing conjoint MI sessions to look quite different from individual MI sessions. Patients have reported lower satisfaction and engagement when SOs involved in MI sessions were heavy drinkers themselves (Magill et al., 2010). Even if SOs are non-drinkers, behaviors such as resistance or blaming may be counter-productive and might actually reduce change talk and perhaps increase sustain talk. Longabaugh and colleagues (1995) found that relationship-focused treatment was less effective than individual treatment when the relationship was highly problematic. To understand how the inclusion of a significant other impacts client change talk, it is necessary to observe and

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code these interactions. This in turn will provide empirically-based guidance on how to select and include SOs in MI-based interventions.

The current study sought to determine effects of SO behavior on client change talk and sustain talk in a single-session MI, utilizing data from a randomized clinical trial of MI for patients treated in an emergency department or trauma center (5R01AA009892, Monti, PI). The parent study compared the relative efficacy of individual MI versus MI involving a significant other for patients who were either intoxicated at the time of their hospital visit, or who screened positive for potentially harmful alcohol use. The present report focuses on within-session observational ratings of the sessions involving a significant other. We hypothesized that SO language supporting change would be associated with higher levels of change talk and lower levels of sustain talk; and that SO language against change would be associated with lower levels of change talk and higher levels of sustain talk. We also sought to replicate previous findings about the associations between therapist MI-consistent and MI-inconsistent behavior with client change talk and sustain talk. In addition, we sought to identify SO baseline characteristics that would help identify which SOs were more likely to be supportive in the session.

Method

Sample

The study included male and female patients ($N = 157$) age 18 or older who received medical treatment in the emergency department or trauma unit at a northeastern hospital. The sample included patients who (a) had blood alcohol concentration greater than .01% or self-reported alcohol use in the six hours prior to hospital entry, or had a score of 8 or higher on the Alcohol Use Disorders Identification Test (AUDIT, Saunders, Aasland, Babor, De La Fuente & Grant, 1993). The AUDIT was administered as a screening instrument to all potential participants. Eligible patients also (b) scored 18 or higher on a mini-mental status exam, and (c) could identify at least one SO who would be appropriate to include in the intervention. To be eligible to participate as a significant other, individuals had to have at least weekly contact with the patient, be rated by patients as at least generally “supportive” of the patient, and be no more than a “moderate” drinker (Important People Instrument; Longabaugh & Zywiak, 1998). Participants who did not speak English, had a self-inflicted injury, or were in police custody were excluded.

Intervention

The overall goal of the intervention was for the patient to explore his or her alcohol use and to consider the possibility of changing their drinking (Apodaca, Gogineni, Barnett & Monti, 2005). The sessions had eight possible components: Describe the Accident/Injury, Typical Week of Alcohol Use, Pros and Cons of Alcohol Use, Personalized Feedback on Alcohol Use, Exploring Goals and Values, Looking Forward/Looking Back, Importance and Confidence Rulers, and a written Change Plan. Toward the end of MI sessions, the Change Plan was introduced, and for patients who were interested in changing, a written plan for change was created. Change Plan worksheets included identification of measurable goals regarding alcohol use, reasons and supports for change, specific actions toward change, and planning for setbacks. When a Change Plan was declined, MI sessions would end with a component aimed at further motivational enhancement (e.g., Exploring Goals and Values, Looking Forward/Looking Back). Provision of referrals to more extensive alcohol treatment was offered to interested patients at the end of the session. The purpose of including the SO in the MI intervention was to enhance the motivation of the patient, and to provide concrete support for patient’s intention to make changes. The SO was encouraged to express any concerns he or she may have about the patient’s drinking and about the event that

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precipitated the hospital admission, and to provide input about the patient's behavior and goals.

Therapists for the study were Ph.D. and masters-level therapists trained in MI and the study protocol. Training was conducted by four Ph.D. psychologists, and required 25–30 hours of reading, demonstration, discussion, and role play exercises. Therapists also received an additional 18 hours of training specifically focused on significant other involvement (e.g., eliciting SO perspective on patient drinking, garnering SO support for change, ways to reduce potentially disruptive SO behavior). Group supervision was provided weekly throughout the duration of the study. The supervisor reviewed audiotapes of the MI sessions, and therapists were given specific feedback to increase their use of MI-consistent behaviors and minimize their use of MI-inconsistent behaviors. All procedures were approved by the university and hospital Institutional Review Boards and participants gave written informed consent.

Process coding measurement and procedure

Audiotaped therapy sessions were transcribed, and five trained bachelors- and masters-level raters coded therapist and client language variables with the second version of Motivational Interviewing Skill Code (Miller, Moyers, Ernst, & Amrhein, 2003). Therapist behavior was coded as either MI-consistent (e.g., complex reflection, affirm, emphasize control, advise with permission), MI-inconsistent (e.g., confront, direct, warn, advise without permission) or Neutral (e.g., facilitate, filler). Patient utterances were coded for speech representing movement toward (change talk) or away from (sustain talk) stopping or reducing use of alcohol (including desire, ability, reasons, need, taking steps, and commitment statements). There are also three global measures of therapist skillfulness in the coding system: empathy, acceptance, and MI spirit (which captures respect for client autonomy, a collaborative approach, and therapist evocation of the client's reasons for change). These global measures are designed to capture the overall *gestalt* of the therapist-patient relationship. The manual for the Motivational Interviewing Skills Code is available at http://casaa.unm.edu/download/misc.pdf.

SO speech was coded using the Motivational Interviewing with Significant Others coding system (Apodaca, Manuel, Amrhein, & Moyers, 2007). Six different types of utterances were coded for the current study, which were then collapsed into two constructs: SO Support Change and SO Against Change. The SO Support Change construct was composed of the following codes: encourage (a statement of support or concern about the patient's drinking); giving advice (suggestion, solution or possible action to make change); and SO change talk (a reason or need for the patient to change their drinking). The second general construct, SO Against Change, was composed of the following codes: direct (an order or command); confront (disapproval or negativity toward the patient); and SO counter change talk (minimizing drinking severity or referring to barriers to changing drinking). This coding system contains four additional behavior codes that were not used for this study, as they were more neutral in nature (e.g., SO discuss self, follow/neutral). More detailed information about the coding measures, along with examples, can be found in Table 1. The manual for the Motivational Interviewing with Significant Others coding system, which contains more information about the development of the coding system and constructs, is available from http://casaa.unm.edu/download/miso.pdf.

The study raters received roughly 40 hours of training in the two coding systems, and participated in ongoing weekly supervision provided by the first and second authors. The training protocol involved graded learning tasks, beginning with simple to increasingly complex identification of therapist, client, and SO behaviors. Raters progressed through a training library of role play and pilot audiotapes until rating proficiency was achieved (an

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intraclass correlation coefficient of .75 or greater). To minimize rater drift, weekly supervision meetings addressed coder questions, specified decision rules, and provided targeted training on low agreement items. A 20% random selection of cases was double-coded to verify continued rater reliability.

Baseline measures

Client and SO demographic information was obtained, along with a 10-item questionnaire of drinking behavior, including quantity and frequency of drinking, alcohol dependence, and problems caused by alcohol (AUDIT; Saunders et al., 1993). In addition, SO participants completed the Significant-other Behavior Questionnaire (SBQ; Love, Longabaugh, Clifford, Beattie & Peaslee, 1993) a 24-item questionnaire that measures alcohol-specific behavior of the SO toward the patient in the six months prior to the intervention. The measure is made up of four subscales: SO Supports Drinking (e.g., “told him he is fun to be with when he had been drinking”), SO Withdraws from Drinker (e.g., “refused to spend time with him when he was drinking”), SO Punishes Drinking (e.g., “refused to take care of him when he was drunk”), and SO Supports Sobriety (e.g., “made a point of doing things together that he enjoys when he was not drunk”). Each subscale score ranges from 1 to 4, indicating how often the SO engaged in each type of behavior, with possible responses including 1 (never or only once), 2 (sometimes), 3 (frequently), or 4 (always or almost always). Internal consistency alphas for these subscales range from 0.75 to 0.87.

Data Reduction and Analysis Plan

To account for variable session length (M = 48.3 minutes, SD = 17.2), we computed proportion scores rather than using raw frequency counts of the therapist, client, and SO behaviors. This was accomplished by dividing the number of occurrences of a target behavior by the total number of utterances by the speaker. For example, to calculate the proportion of client change talk: change talk / (change talk + sustain talk + neutral). This resulted in a range of possible scores from 0 – 1.0 for each variable, yielding the proportion (percentage) of speech utterances for each variable. This procedure also helped to account for some therapists, clients, or SOs simply talking faster than others.

We divided each session into ten equal segments, or deciles, following previous work in this area (Amrhein et al, 2003). To test within-session relationships between predictor variables and change talk, we lagged therapist and SO variables, and examined the association between therapist/SO variables at decile j with client change talk/sustain talk at decile j + 1. This permitted us to establish directionality, consistent with our expectation that therapist and SO behavior affects client behavior. Because of the structure of the data where deciles were clustered within session, we used multilevel modeling (MLM; also called hierarchical linear modeling; Raudenbush & Bryk, 2002; Snijders & Bosker, 1999). All analyses were conducted in SAS PROC MIXED.

The models examined decile measures of client change talk and sustain talk as outcomes and the (lagged) decile measures of MI-consistent, MI-inconsistent, SO Support Change, and SO Against Change as randomly varying predictors. The model was fit as follows (using the example of a model with SO Support Change as a predictor of change talk/sustain talk):
Model: (Decile)

$$\eta_{ij} = \beta_{0j} + \beta_{1j}\,(\text{SO Support Change}) + r_{ij}$$

where η_{ij} is the outcome variable across session i and decile j, β_{0j} is the Level 1 (within-session) intercept, β_{1j} is the Level 1 (within-session) slope, and r_{ij} is the composite residual variance comprised of both within-session and between-person residual variance.

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We examined the predictors one at a time in a series of models, because multivariate analyses did not converge, most likely because the therapist MI-inconsistent variable had very low frequencies (M = 2.2 per session, SD = 3.5). Hence, a total of twelve models were examined (one for each cell of Table 4).

While the decile analyses represent an analytic advance over aggregate relationships, we also examined aggregate relationships to aid in comparability between our study and others (Moyers et al, 2009; Vader et al., 2010). We also analyzed the relationship between therapist global ratings of acceptance and MI spirit with client change talk and sustain talk. These analyses were conducted using ordinary least squares (OLS) regression, as models included variables aggregated at the session level rather than in deciles.

Results

Descriptive Information

The patient sample was 65% male, with a mean age of 33.2 (SD = 11.1) and a mean AUDIT score of 15.9 (SD = 8.5). Participants identified their race as follow: 69% Caucasian, 20% African-American, 4% Native American, and 7% as Other/Multicultural. Regarding marital status, participants were primarily single, never married (59%). The remainder were either divorced (13%), living together (8%), married (14%) or separated (6%).

Regarding SOs, the sample was 68% female. The majority (77%) of SOs named as the participant's first choice were recruited into the study. Of all recruited SOs, 41% were romantic partners, 30% were friends, and 29% were family members. SO baseline variables from the AUDIT and Significant-other Behavior Questionnaire are presented in Table 2.

Intraclass correlation coefficients (ICCs) were calculated for each variable to determine interrater reliability across rater pairs (using the 20% sample of double-coded tapes). Reliabilities were almost all in the "excellent" range, with only one (SO Confront) falling into the "fair" range, according to criteria established by Cicchetti (1994). The global empathy rating had low reliability (ICC = .29), and we did not include it in our analyses. Overall, therapists exhibited a large number of MI-consistent behaviors, and very few MI-inconsistent behaviors along with medium-to-high global (acceptance and MI spirit) ratings, while clients voiced about twice as many change talk statements as sustain talk statements per session. Significant others exhibited a range of language, with supportive statements occurring more frequently than unsupportive statements (Table 2).

Controlling for therapist effects

Because the 157 sessions were conducted by 11 therapists, there was a possibility of nesting effects that would lead to standard errors that are underestimated (and inflated tests of significance). To gauge the extent of nesting in the data, we estimated a series of unconditional multilevel models and calculated intraclass correlations (ICC). As might be expected, there were high ICC values for the therapist behaviors with 53% of the variability in MI-consistent and 12% of the variability in MI-inconsistent being within-therapist variability. Four percent of the variability in change talk and 19% of the variability in SO Support Change were within-therapist variability; however, the ICCs for sustain talk and SO Against Change were zero, indicating that variance in these behaviors is not due to variability across therapists. Further descriptive information about how therapist, client, and significant-other behavior varied across therapists is presented in Table 3.

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Therapist and SO behavior predicting client change talk and sustain talk at the decile level

We first sought to examine the data on a decile level. We controlled for the therapist global scores because they did not change from one decile to the next, as they were assigned to capture the overall *gestalt* of the session. As can be seen in Table 4, the decile analyses showed no association between MI-consistent language and change talk (β = 0.028, *SE* = 0.031, *p* = .37) or between MI-consistent language and sustain talk (β = −0.015, *SE* = 0.019, *p* = .42). MI-inconsistent language also failed to predict sustain talk (β = −0.126, *SE* = 0.133, *p* = .35), and the model predicting change talk from MI-inconsistent language failed to converge, possibly due to the low base rates of MI-inconsistent language mentioned previously.

Next, we predicted client change talk and sustain talk from SO Support Change and SO Against Change at the decile level. SO Support Change significantly and strongly predicted both change talk (β = 0.086, *SE* = 0.023, *p* < .001) and sustain talk (β = −0.089, *SE* = 0.014, *p* <.001), showing that a higher proportion of SO language supporting change was likely to be followed in the subsequent decile by a higher proportion of client change talk and a lower proportion of client sustain talk.[1] In contrast, SO Against Change did not predict either change talk (β = 0.031, *SE* = 0.027, *p* = .27) or sustain talk (β = 0.001, *SE* = 0.024, *p* = .96). Therapist global ratings were also examined in relation to client language variables. Neither MI spirit nor acceptance was associated with change talk. However, higher scores of both MI spirit (β = −0.013, *SE* = 0.004, *p* = .002) and therapist acceptance (β = −0.017, *SE* = 0.004, *p* < .001) were significantly associated with less client sustain talk. (See Table 4).

Therapist and SO behavior predicting client change talk and sustain talk at the session level

Our second set of analyses aimed to replicate prior studies that reported client change talk and sustain talk are predicted by therapist MI-consistent and MI-inconsistent behaviors when analyzed at the aggregate level. Using OLS regression, we regressed client language summed across the session on each of the therapist and SO behaviors. Therapist MI-consistent (β = 0.168, *SE* = 0.070, *p* =.018, f^2 = 0.03) predicted higher levels of change talk, and MI-inconsistent (β = −1.836, *SE* = 0.675, *p* =.007, f^2 = 0.04) predicted lower levels of change talk during the session. SO Support (β = 0.392, *SE* = 0.050, *p* <.001, f^2 = 0.37) was also predictive of higher levels of change talk during the session, while SO Against was not. MI-consistent and MI-inconsistent language only accounted for a small proportion of the variance in change talk (3% and 4% respectively) while SO Support accounted for 27% of the variance in change talk at the aggregate level. Predicting sustain talk on the aggregate level, SO Against Change was the only variable that predicted sustain talk (β = 0.302, *SE* = 0.045, *p* <.001, f^2 = 0.27), accounting for 21% of the variance in sustain talk.

SO characteristics as predictors of SO Support Change

Because SO Support Change emerged as a significant predictor of change talk and sustain talk, our final step was to determine which SO baseline measures were associated with SO Support Change language. We conducted OLS regression models predicting SO Support Change (aggregated across session) from the four subscales of the Significant-other

[1]We were intrigued by the possibility that therapist behaviors might indirectly affect client change talk by influencing SO behavior initially (i.e., therapist → SO → client). We ran exploratory analyses to examine whether therapist MI-consistent and MI-inconsistent behavior was predictive of SO Support and SO Against language, in the decile analysis format. Using MLM analyses in SAS PROC MIXED, we examined cross-lagged decile measures of SO Support Change and SO Against Change as outcomes, and the (lagged) decile measures of MI-consistent and MI-inconsistent as randomly varying predictors. These analyses were parallel to the main analyses of the paper. Results showed that MI-consistent did not predict either SO Support or SO Against language in the following decile. The model using MI-inconsistent therapist language wouldn't run, which was not surprising given the same results in the main analyses.

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Behavior Questionnaire (SO Supports Drinking, SO Withdraws from Drinker, SO Punishes Drinking, SO Supports Sobriety), controlling for three SO baseline characteristics: gender, SO Audit, and SO relationship. As shown in Table 5, results showed that the SO Supports Drinking subscale ($\beta = -0.049$, $SE = 0.022$, $p = .03$, $f^2 = 0.06$) and the SO Punishes Drinking subscale ($\beta = 0.048$, $SE = 0.020$, $p = .02$, $f^2 = 0.06$) were each significant predictors of SO Support Change language in the expected direction: lower levels of SO Supports Drinking and higher levels of SO Punishes Drinking measured at baseline were associated with greater levels of SO Support Change language as measured during the session. To be consistent with the analyses conducted in our examination of decile-level speech utterances, we also examined these associations using multilevel models, even though all predictors were at the session level. Substantive findings were identical.

Discussion

The participation of a significant other in an MI session affects the occurrence of client verbalizations toward or against change. While prior studies of therapist-client MI dyads have consistently demonstrated a strong association between therapist MI-consistent and MI-inconsistent behaviors and client change talk and sustain talk, the present study only found this association when aggregate (summed) values were used, and therapist behavior only accounted for a very small proportion of the variance in client language. When examined at the decile level across the course of the session, therapist behavior was not predictive of subsequent client language; only SO language supporting change predicted higher levels of change talk and lower levels of sustain talk in the following decile. This was an unexpected and surprising finding, given the number of studies that have previously found support for the associations between therapist and client language (Guame et al., 2008b, 2010; Moyers, et al., 2007, 2009; Vader et al., 2010). It is possible that the inclusion of an SO changes the interactional dynamics such that patient behavior during the session (language) has become conditional upon a different set of contingencies. Patient change talk and sustain talk appear to be a function of SO's supportive speech, more so than prior therapist behaviors, at least at this level of analysis. The importance of social networks on client drinking and help-seeking has long been observed, but this is first report we are aware of that begins to illustrate ways in which SO influence on drinkers unfolds in the process of treatment. Our results are generally consistent with earlier research that shows that family involvement in treatment is associated with more positive outcomes among alcohol-dependent populations (McCrady, 2004), and data suggesting that support *for drinking* from the social network is associated with poorer outcomes (Longabaugh, Wirtz, Zweben, & Stout, 1998). In sum, findings suggest that when an SO is involved in an MI intervention, SO support for change is the key variable in evoking patient change talk, while therapist impact comes from overall relational approach (global measures) rather than specific behavior within the session.

These findings naturally lead to a new focus: how to produce SO support for change during a session. Our analysis of pre-intervention SO characteristics provides some guidance. Somewhat surprisingly, neither gender, SO drinking status, nor SO relationship to the patient was significantly predictive of SO Support Change language during the session. However, the way in which the SO reported interacting with the patient during the six months prior to treatment was predictive. Those SOs who were already engaging in behaviors that tended to punish or discourage the patient's drinking behavior were more likely to be supportive of change during the session. Alternatively, those SOs who reported being supportive of the patient's drinking in the six months prior to the session were unlikely to voice support for drinking changes during the session. These findings are novel, because very few studies have included significant others in MI sessions. However, in one other recent study, Manuel and colleagues (2012) used available recordings of Motivational

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Enhancement Therapy sessions from Project MATCH (Project MATCH Research Group, 1997) that included a significant other ($N = 27$) . This is the only other study we are aware of that measured therapist, SO, and client behaviors in MI-based sessions. The study examined correlations between client language and SO variables coded with the same SO coding system used in the current study (Apodaca et al., 2007), with some similar results. For example, SO encourage/support, giving advice, and change talk were each individually positively correlated with client change talk (these three individual variables were combined to form the SO Support variable in the current study). They also found evidence that SO language against change was predictive of alcohol use at followup. They did not report on the relationship between therapist behavior and client language during the session.

The present study suggests that involving an SO in an MI session may reduce the impact of therapist behavior on client change language, while SO behavior plays an important role in evoking client intention. This is a heartening finding given MI's emphasis on facilitating intrinsic motivators and natural helping systems for behavior change. In the presence of an SO, the therapist's role may become that of facilitator, reinforcing supportive behavior and reframing confrontational or unsupportive behavior on the part of the SO. Study findings also have clinical importance more broadly given the generalist nature of behaviors that are categorized as MI-consistent (i.e., open questions, affirmations, simple and complex reflections) and emergent studies that find change talk may be a non-specific mechanism of change rather than a predictor of unique theoretical relevance to MI (Aharonovich et al., 2008; Moyers et al., 2007).

Because global measures of therapist approach were predictive of client language, while therapist behavior counts were not, this study lends support to the hypothesis that MI has both *technical* (specific behaviors) and *relational* (global approach) aspects that are important in the change process (Miller & Rose, 2009). The role of further research will be to identify how the therapist can maximize SO impact. In future studies, we plan to conduct sequential analysis on an utterance-by-utterance basis. We have recently finished recoding these data in a way to facilitate these analyses, which will more sensitive at clarifying the relationship between therapist, SO, and client.

Limitations and strengths

A limitation of the current study is that the encounter was just one session. While this is typical for MI, it is not typical for most work involving SOs. It remains to be seen if our findings would hold up across multiple SO sessions. It is possible that therapist behavior could differentially impact behavior of both the client and SO as treatment progresses across a longer treatment regimen. The SO inclusion criteria for this study are another potential limitation. The patient selected a significant other from his or her social network, who was described by the patient as no more than a moderate drinker and one who is generally supportive of the patient. If the intervention included a heavy drinking SO, or a highly conflictual relationship, the SO might bring a very different dynamic to the therapy. It is also important to note that these analyses were conducted on data collected from an efficacy trial, where a high priority was placed on training therapists and maintaining fidelity to a specific treatment model, which restricted therapist variability. As a result, therapists produced very few MI-inconsistent utterances – too few to analyze in fact. Replicating this study within a community sample or in the context of an effectiveness trial (where more MI-inconsistent language might be observed), could lead to different findings than those reported here. A final limitation of the current study is that our coding system uses audiotapes, which do not capture as much information as a videotaped recording might provide. Potentially important nonverbal behavior are missed when using audiotapes. For example, subtle behavioral mimicry has been found to increase how much people empathize with and trust one another, and fluidity of speech can be perceived as expertise (Pentland, 2008).

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There are a number of unique strengths to this study, as well. We made two innovations in our analytic plan. First was our decision to use proportion scores rather than frequencies. Studies that sum frequencies of therapist and patient utterances over the course of an MI session (e.g., Vader et al., 2010) are not able to control for the possibility of confounds created by variability in the total number of utterances by therapist and patient. Such variability might be attributable to session length or to greater speech productivity within the same period of time. By using proportion scores we have ruled out these alternative explanations. Our second innovation was to use a lagged decile analysis to partially address the temporality issue as to the direction of causality between therapist or SO speech and subsequent client speech. To address this issue of temporality, some studies have examined the transitional probabilities of therapist MI-consistent and MI-inconsistent language being followed by change talk and sustain talk (e.g., Gaume et al., 2010, Moyers et al., 2009). These studies demonstrate the likelihood that change or sustain talk will *immediately follow* a particular therapist utterance. The present study has taken a different approach by using therapist and SO behavior in one decile to predict patient behavior in the subsequent decile, a different methodology to demonstrate what happens *over the course of the session* in approximately five-minute segments. This provides a different perspective from utterance-to-utterance sequential analyses.

Future Directions

In future work, we plan to examine whether change talk and sustain talk are predictive of outcome in SO-involved MI sessions. Once followup outcome data are collected, we will be able to test the model implied in the current report: that SO support predicts patient change talk, which predicts patient drinking outcomes. We have also recently finished sequential re-coding of the data, which will allow for investigation of more complex patterns. For example, perhaps a sequence may be initiated such that the SO makes a support change utterance to the patient, who responds with change talk, which is followed by therapist affirmation. This sequence in turn may then increase the probability that the SO will initiate another support change statement.

It will also be useful to investigate whether meaningful distinctions exist between the subtypes of change talk (e.g., desire, ability, reasons, need, commitment) measured using the Motivational Interviewing Skills Code (Miller et al., 2003). A seminal study in this area (Amrhein et al., 2003) found that desire, ability, reasons and need predicted commitment statements, which in turn predicted outcomes. Subsequent research examined the relative importance of different aspects of client speech. Gaume and colleagues (2008a) found that client *ability* statements predicted drinking outcomes, while Baer and colleagues (2008) found that client *reasons* statements were associated with reductions in substance use. Both of these studies found that commitment language did not predict outcomes. Additionally, a recent analysis of the structure of client language and drinking outcomes found that multiple types of change talk can predict outcomes, suggesting that clinicians may adopt a broad focus on the general concept of change talk in an MI session rather than a strict focus on a particular subtype (Martin, Christopher, Houck, & Moyers, 2011).

Finally, we are interested in examining separate components of interventions commonly used in MI (e.g., delivering personalized feedback, exploring a decisional balance, discussing goals and values, creating a change plan) to investigate whether the amount or type of change talk generated during these different components is differentially predictive of outcomes. Because a recent review suggests that among specific techniques in MI, the use of a decisional balance exercise showed the strongest association to better outcomes (Apodaca & Longabaugh, 2009), this promises to be an informative line of research. Such work would allow for the further streamlining and enhancement of MI-based brief interventions across a variety of settings.

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Table 1

Therapist, Client, and Significant Other Behavior Codes

Code	Description	Example	
Therapist MI-consistent			
Affirm	The therapist says something positive or complimentary to the client. It may be in the form of expressed appreciation, confidence or reinforcement.	"You're a very resourceful person."	
Emphasize control	The therapist directly acknowledges, honors, or emphasizes the client's freedom of choice, autonomy, or personal responsibility.	"It is totally up to you whether you quit or cut down."	
Open question	The therapist asks a question that allows a wide range of possible answers. The question may seek information, invite the client's perspective, or encourage self-exploration.	In what ways has drinking caused problems for you?	
Advise with permission	The therapist gives advice, makes a suggestion, or offers a solution or possible action, after first asking client permission to do so	"We could try brainstorming to come up with ideas about quitting if you like."	
Raise concern with permission	After first asking permission to do so, the therapist points out a possible problem with a client's goal, plan, or intention, which contains language that marks it as the therapist's concern (rather than fact).	"Is it OK if I tell you a concern that I have about that? I wonder if it puts you in a situation where it might be easy to start drinking again."	
Simple reflection	A reflective listening statement made by the therapist in response to a client statement, that serves to simply repeat or rephrase what the client has said.	"It's confusing to you why you need to be here."	
Complex reflection	A reflective listening statement that adds substantial meaning or emphasis to what the client has said.	"On one hand you feel you need the relief that alcohol can provide, and at the same time you're having some real concerns about your health."	
Reframe	The therapist suggests a different meaning for an experience expressed by the client, placing it in a new light.	"Sounds like she's pretty concerned about you." *(reframes spouse's "nagging" as "concern")*	
Therapist MI-inconsistent			
Advise without permission	The therapist gives advice, makes a suggestion, or offers a solution or possible action, without asking client permission to do so.	"You could ask your friends not to drink at your house."	
Raise concern without permission	The therapist points out a possible problem with a client's goal, plan, or intention, without asking client permission to do so.	"I think you may wind up drinking again with your old friends."	
Confront	The therapist directly disagrees, argues, corrects, shames, blames, seeks to persuade, criticizes, judges, labels, moralizes, ridicules, or questions the client's honesty.	"You knew you'd lose your license and you drove anyway."	
Direct	The therapist gives an order, command, or direction.	"You've got to stop drinking."	
Warn	The therapist provides a warning or threat, implying negative consequences unless the client takes a certain action.	"You're going to relapse if you don't get out of this relationship."	
Client language		Change talk	Sustain talk
Ability	Personal perceptions of capability or possibility of change.	"I can do it."	"I don't think I could change."
Commitment	An agreement, intention, or obligation regarding future change; can be expressed directly via a committing verb, or indirectly.	"I'll cut back on weekends."	"I probably won't change while I'm in college."

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Code	Description	Example	
Desire	Client indicates a wanting or wishing to change or not change.	"I just want to wake up sober in the morning"	"I don't want to quit."
Need	Client indicates a necessity, urgency, or requirement (or lack thereof) for change.	"I really have to quit getting messed up like this."	"I don't think I need to cut down."
Reason	Client specifies a particular rationale, basis, incentive, justification, or motive for making (or not making) a change.	"I really can't afford to get another DWI."	"Drinking helps me to relax and meet people."
Taking steps	Client describes a particular action taken in the recent past that is clearly linked to moving toward or away from change.	"I stayed away from parties last weekend."	"I ended up blacking out on Friday night."
SO[a] Support Change			
Encourage/support	Statements of encouragement or support that relate either generally to the client as a person or specifically about the client's drinking.	"I'll give him a ride to his counseling appointments if he needs it."	
Give advice	Advice, suggestions, or possible solutions or action regarding the client's behavior.	"You could try going to AA."	
SO change talk	SO language that can be categorized into one of the following forms of speech: desire, ability, reasons, need, commitment, or taking steps toward the client making a change in his or her drinking.	"He's got a level head when he's sober."	
SO[a] Against Change			
Direct	The SO gives an order, command, or direction using imperative language.	"You've just gotta change your ways!"	
Confront	Language that conveys disapproval, disagreement, or negativity; the SO directly argues, shames, or blames the client.	"You knew it was stupid to drive after you'd had that much to drink."	
SO Sustain talk	Language that minimizes the severity of the client's drinking, refers to barriers to changing drinking, or highlights positive aspects of the client's drinking.	"He's a lot of fun when he's drinking."	

Note. Descriptions and examples of therapist and client codes come from the Manual for the Motivational Interviewing Skill Code (MISC), Version 2.0. (Miller et al., 2003). Descriptions and examples of significant other codes come from the Motivational Interviewing with Significant Others (MISO) Coding Manual (Apodaca et al., 2007).

[a]SO = significant other.

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Table 2

Descriptive Information and Reliability

Measure	Session Mean	*SD*	Range	Proportion	ICC[a]
Process coding					
Therapist					
Acceptance global rati	ng 5.1	1.2	2 – 7	-	.62
MI Spirit global rating	4.7	1.2	1 – 7	-	.48
MI-consistent	126.7	63.9	26 – 326	60%	.99
MI-inconsistent	2.2	3.5	0 – 16	< 1%	.69
Client					
Change Talk	47.9	29.0	2 – 196	28%	.94
Sustain Talk	22.0	15.8	2 – 83	13%	.91
Significant Other[b]					
SO Support Change	23.6	18.1	0 – 91	28%	.95
Encourage	6.0	6.0	0 – 25	8%	.87
Giving Advice	2.3	4.3	0 – 32	3%	.94
SO Change Talk	12.6	11.0	0 – 49	17%	.88
SO Against Change	10.4	11.9	0 – 69	12%	.82
Direct	1.0	2.1	0 – 14	1%	.81
Confront	1.6	3.9	0 – 20	2%	.41
SO Counter Chang	e Talk 5.7	6.5	0 – 45	9%	.91
Baseline assessment					
SO AUDIT[c]	7.6	8.2	0 – 34		
Significant-other Behavior Questionnaire					
Supports Drinking	1.7	0.6	0.3 – 3.3		
Withdraws from Drinker	1.4	0.7	0.0 – 3.6		
Punishes Drinking	1.8	0.8	0.6 – 4.0		
Supports Sobriety	2.4	0.7	1.0 – 4.0		

Note. $N = 157$.

[a]ICC = intraclass correlation coefficient. Reliability estimates based on a 20% sample of double-coded tapes. Cicchetti (1994) suggests the following guidelines for assessing reliability of observational coding systems: ICC of .75 or above = excellent; .60–.74 = good; .40–.59 = fair; below .40 = poor. We did not include the global empathy rating in analyses due to low reliability (ICC = .29).

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[b] The SO Support Change and SO Against Change variables used in analyses were composed of the three subtypes of language indicated in the table; hence relevant values for these subtypes are also included in the table.

[c] AUDIT = Alcohol Use Disorders Identification Test.

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Table 3

Descriptive Information of Therapists

Therapist	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
No. sessions	3	2	1	9	18	16	39	36	31	8	4
Avg. length (*SD*)	56.9 (7.4)	39.3 (21.0)	40.3 -	52.0 (15.7)	42.1 (13.6)	35.7 (11.3)	49.1 (20.6)	41.9 (18.1)	49.7 (12.4)	66.3 (18.6)	55.3 (17.1)
Global therapist ratings											
Acceptance (*SD*)	7.0 (0.0)	5.5 (0.7)	6.0 -	5.3 (1.2)	4.9 (1.4)	5.3 (1.1)	4.6 (1.2)	4.7 (1.3)	5.4 (0.7)	5.6 (0.5)	5.0 (0.8)
MI Spirit (*SD*)	6.7 (0.6)	6.0 (0.0)	4.0 -	4.8 (1.3)	4.1 (1.6)	4.8 (1.2)	4.1 (1.0)	4.4 (1.2)	5.3 (0.8)	5.5 (0.8)	5.3 (0.5)
Behavior counts											
MI-consistent (*SD*)	160.3 (58.2)	88.5 (19.1)	127.0 -	77.8 (28.5)	66.3 (29.1)	85.7 (23.4)	142.0 (67.7)	147.1 (54.1)	212.9 (49.3)	123.3 35.5)	149.5 (46.8)
MI-inconsistent (*SD*)	0.0 (0.0)	0.0 (0.0)	0.0 -	3.7 (4.6)	3.7 (5.1)	1.4 (1.9)	2.7 (4.0)	1.5 (2.3)	1.6 (1.9)	0.6 (0.7)	0.5 (1.0)
Change Talk (*SD*)	55.7 (30.9)	20.5 (0.7)	38.0 -	42.4 (21.5)	42.4 (21.5)	46.1 (19.2)	54.0 (39.2)	46.7 (24.6)	57.4 (26.6)	64.8 (28.5)	71.3 (32.6)
Sustain Talk (*SD*)	18.7 (15.5)	5.5 (0.7)	11.0 -	17.6 (9.9)	22.8 (9.9)	16.3 (14.4)	23.8 (14.6)	20.9 (12.5)	30.8 (18.6)	35.5 (19.0)	14.8 (11.6)
SO Support Change (*SD*)	30.7 (7.8)	12.5 (17.7)	10.0 -	16.3 (23.2)	16.0 (15.4)	9.9 (9.1)	24.1 (18.8)	25.4 (15.2)	32.0 (18.1)	28.6 (21.9)	34.8 (22.5)
SO Against Change (*SD*)	4.3 (6.7)	6.5 (3.5)	3.0 -	8.2 (10.8)	9.8 (11.2)	5.9 (8.2)	9.4 (7.8)	7.8 (8.8)	16.3 (17.8)	21.6 (15.8)	11.0 (10.9)

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Table 4

Therapist and SO Behavior Predicting Client Change Talk and Sustain Talk at the Decile Level

Variables	Change Talk			Sustain Talk		
Therapist Measures (global)	**β**	***SE***	***p***	**β**	***SE***	***p***
Therapist MI Spirit	0.001	0.007	.87	−0.013	0.004	.002
Therapist Acceptance	−0.001	0.007	.97	−0.017	0.004	<.001
Therapist Behavior (lagged)						
MI-Consistent	0.028	0.031	.37	−0.015	0.019	.42
MI-Inconsistent [a]	-	-	-	−0.126	0.133	.35
SO Behavior (lagged)						
SO Support Change	0.086	0.023	<.001	− 0.089	0.014	<.001
SO Against Change	0.031	0.027	.27	0.001	0.024	.96

Note.

[a]Values are not reported for the relationship between Therapist MI-Inconsistent and Client Change Talk because the multilevel model failed to converge. This was likely due to low base rates of MI-Inconsistent behavior.

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Table 5

Effects of Significant-other Behavior Questionnaire Subscales on SO Support Change and SO Against Change, Controlling for Covariates

	SO Support Change			SO Against Change		
Variables	**β**	***SE***	***p***	**β**	***SE***	***p***
Subscales						
SO Supports Drinking	−0.049	0.022	.03	0.027	0.016	.08
SO Withdraws from Person	−0.013	0.023	.56	0.008	0.016	.61
SO Punishes Drinking	0.048	0.020	.02	−0.022	0.014	.13
SO Supports Sobriety	0.013	0.019	.49	−0.001	0.014	.96
Covariates						
Gender	0.021	0.024	.40	0.038	0.017	.03
SO AUDIT	0.002	0.002	.92	0.001	0.001	.65
Relationship: Romantic[a]	−0.007	0.029	.80	0.014	0.020	.21
Relationship: Family[a]	0.029	0.031	.35	−0.010	0.022	.49

Note.

[a]Reference Group = friend/other.