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The In-Session and Long-Term Role of a Significant Other in Motivational Enhancement Therapy for Alcohol Use Disorders

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Abstract

Objective—To examine how significant other (SO) language in support of or against client abstinence from alcohol influences clients' in-session speech and drinking behavior over the 9 months post-Motivational Enhancement Therapy (MET).

Method—Sequential analyses were used to examine the language of Project MATCH clients who invited an SO to participate in an MET session. Hierarchical regressions investigated the predictive relationship between SO language and clients' post-treatment drinking behavior. A cohort analytic design compared the change language of these SO-involved participants against a matched group who chose client-only therapy.

Results—'SO Support Change' language increased the odds of client Change Talk in the next utterance ($p < .01$). SO Support Change did not significantly predict reduced post-treatment drinking whereas 'SO Against Change' significantly predicted an increase in average drinks per drinking day (DDD) across months 7-9 post-MET ($p = .04$). In the matched comparison, the proportion of change-related client language was comparable across the SO-involved and client-only groups.

Conclusions—Motivational interviewing theory was supported by the sequential association between SO and client language as well as the predictive link between SO Against Change and client drinking intensity. Given the centrality of *pro*-sobriety language in the literature, it was surprising that SO Support Change did not predict alcohol use outcomes. Findings are discussed in relation to contemporary treatment process research and clinical practice.

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Keywords

Alcohol Treatment; Change Language; Change Talk; Motivational Interviewing; Motivational Enhancement Therapy; Process Research

1. Introduction

Of the adult population in the United States (US), 7% meets the threshold for an alcohol use disorder (AUD) (National Institute on Alcohol Abuse and Alcoholism, 2015). Whilst the diagnosis of an AUD marks clinically significant impairment at the individual level (American Psychiatric Association [APA], 2013), a person's social network can play an important role in the onset, maintenance and treatment of this hazardous drinking.

1.1 The Role of Significant Others in the Onset and Maintenance of an AUD

Within a 'wet' social network (Longabaugh, Wirtz, Zweben, & Stout, 1998), the individual experiences more opportunities and social pressure to drink (Manuel, McCrady, Epstein, Cook, & Tonigan, 2007). Members can become less attuned to the problematic nature of their drinking (Sher, Grekins, & Williams, 2005) and less likely to seek treatment (Cohen, Feinn, Arias, & Kranzler, 2007). Epstein and McCrady (1998) highlight a reciprocal dynamic between a romantic partner's problem drinking and the quality of their relationship. Heavy alcohol use can be a source of dissatisfaction and poor communication, as well as a maladaptive response to such dyadic characteristics (Leonard & Eiden, 2007). This detrimental role of a significant other (SO) can maintain problem drinking even during treatment. In a study of an individual compared to an SO-involved motivational interviewing (MI) session, participants in the conjoint condition felt less able to engage with therapy when their SO accepted their current alcohol consumption or drank heavily themselves (Magill et al., 2010).

1.2. Significant Other Involvement in Alcohol Treatment

The research generally supports the value of involving a member of the client's support network during alcohol treatment. For instance, Powers and colleagues (2008) conducted the first meta-analysis to compare Behavioral Couples Therapy (BCT) against client-only treatment for substance use disorders (eight of the 12 randomized control trials included focused on alcohol use). When all time points were combined, BCT was linked to a greater reduction in client drinking and enhanced relationship quality, relative to individual treatment. However, the drinking outcomes following conjoint MI have been more variable to date. The COMBINE study (COMBINE Study Research Group, 2003) examined an intervention for AUDs that combined MI-based therapy with alcohol medications. Hunter-Reel and colleagues (Hunter-Reel, Witkiewitz, & Zweben, 2012) conducted a secondary analysis of the data to compare the outcomes for clients who opted to invite an SO to attend at least one session with those who did not. In this non-randomized trial, participants in the SO-involved group reported drinking less frequently and experiencing fewer negative alcohol-related consequences at treatment completion. However, this between-condition difference was not maintained over the 52-week follow-up. Monti and colleagues (2014) randomized patients to either an individual-only or an SO-enhanced condition. The SO-

involved group showed greater reduction in drinking intensity over the year post-treatment, whereas the groups were equivalent in both their drinking frequency and self-reported negative alcohol consequences.

1.3. MI Theory and the Role of Significant Others

MI is a collaborative intervention that aims to achieve behavior change by capitalizing on the client's existing personal and social resources (Miller & Rollnick, 2013). In the context of alcohol use, conflicted feelings about drinking are viewed as an obstacle to behavior change. Self-expressed language that presents an argument for reduced alcohol consumption ('Change Talk') may facilitate resolution of this ambivalence. The 'MI-consistent' therapist elicits Change Talk by emphasizing the client's control over their own behavior and ability to achieve change (Moyers & Martin, 2006). MI treatment process research provides support for this relationship. Sequential statistical analyses indicate that pro-abstinence client statements are more likely immediately after MI-consistent clinical interventions than after other interventions (Moyers et al., 2007). Indeed, Moyers, Martin, Houck, Christopher and Tonigan (2009) have proposed and supported client Change Talk as a mediator in the pathway from therapist MI-consistent behavior to within-treatment drinking outcome.

The therapist's collaborative stance, capitalization on natural resources, and exploration of client ambivalence are central to the MI ethos. These tenets suggest that SO-involvement is appropriate to the approach and could be beneficial. An SO could draw on their close relationship with the client to enrich the motivational interview (Miller, Zweben, DiClemente, & Rychtarik, 1995). SOs may additionally guide in-session problem solving by highlighting everyday barriers to client abstinence (Manuel, Houck, & Moyers, 2012). In fact, during a brief conjoint MI intervention on an emergency ward (Apodaca, Magill, Longabaugh, Jackson, & Monti, 2013), it was observed that SOs can heighten client awareness of drinking as a problem by identifying their own need, reasons and desire for behavior change. Specifically, client Change Talk was more likely within the session decile after their SO expressed encouragement, support, constructive advice or pro-change statements in relation to drinking.

1.4. Significant Other Involvement in MI: Research and Practice

Given emerging findings on conjoint MI to-date, fine-grained analysis is critical to enhance understanding of ways in which an SO can be most beneficial to the effectiveness of the treatment. Studies must examine the specific contribution that SOs make to the dynamic of therapy, as well as their impact on client outcome. Manuel and colleagues (2012) analyzed the relationship between client and SO utterances to investigate the first of these two research questions. They examined the first Project MATCH (Project MATCH Research Group, 1997) Motivational Enhancement Therapy (MET) session for clients who invited an SO to participate. There was a positive correlation between client Change Talk and SO statements that offered encouragement, advice or a favorable view of abstinence from alcohol.

Post-treatment drinking can be used to assess the second research question regarding the long-term impact of SO language on client behavior change. Manuel et al. (2012) found that

SO 'Sustain Talk' (statements in favor of continued drinking) predicted increased drinks per drinking day across the first 6 months after therapy. These data justify further investigation into the clinical importance of conjoint MI-based treatment, both within and beyond the therapy session.

1.5. Current Study

The current study was a secondary analysis of Project MATCH MET sessions. It was designed to investigate how SO participation and speech relate to client change language within the session, as well as to client alcohol use post-treatment. Analyses were informed by the following aims:

Sequential analysis—Hill's (1965) criterion of temporality states that 'cause' must precede 'effect' before causality can be inferred. Sequential analysis was applied in the present study, in accordance with a recent investigation of conjoint MI (Apodaca et al., 2013). Specifically, it was hypothesized that (1) SO pro-behavior change statements would increase the odds of subsequent client Change Talk and (2) SO utterances advocating continued drinking would increase the likelihood of client Sustain Talk.

Replication of Manuel et al., 2012—This study aimed to replicate Manuel and colleagues' investigation of SO involvement in Project MATCH MET Session 1. It was hypothesized that a higher proportion of SO anti-change statements would predict higher client drinking intensity (operationalized as mean drinks per drinking day [DDD]). Manuel and colleagues did not identify an equivalent link between post-treatment alcohol consumption and SO statements in favour of the target behavioural outcome. Here, examining the nature of this predictive relationship between SO pro-change language and client drinking was of interest because MI theory indicates an integral role for Change Talk in relation to behaviour change. This study builds upon and extends Manuel et al.'s research in three key ways. Sequential analyses examined the predictive link between SO speech and client change language, beyond the evidence that the two are associated. A longer assessment period with multiple follow-up waves was designed to track post-treatment alcohol use with greater sensitivity. Finally, recommendations from Alcohol Behavioral Couples Therapy (ABCT) process research (McCrady et al., 2013) were included within the data collection phase (see Measures, Section 2.4.). In this way, we hoped to enhance between-coder agreement and draw links to other studies that also examine conjoint treatment.

SO-involved vs. Individual MET comparison—The current study aimed to assess client change-related language during individual as compared with conjoint therapy. In a cohort analytic design, clients who invited an SO to attend MET were compared against a retrospectively matched group who did not. Independent sample *t*-tests were used to examine between-group differences in proportion of client Change and Sustain Talk. As noted in the Introduction, existing research indicates that SO-involved MI may be associated with less frequent (Hunter-Reel et al., 2012) or less intense (Monti et al., 2014) client drinking, relative to the individual format. The present study adopted the tentative hypothesis that clients in the SO-involved group would vocalize more Change Talk and less

Sustain Talk than their client-only counterparts. It is important to note the novel nature of these analyses. The authors are not aware of another study to-date that has used the Motivational Interviewing with Significant Others (MISO) coding system within such a comparative research design (see Measures, Section 2.4. for a full description of the MISO measure).

2. Materials and Methods

2.1. Data Source: Project MATCH

Project MATCH (1997) tested the “matching hypothesis”: can problematic alcohol use be treated more effectively by matching therapeutic modality to client profile? This multi-site trial involved nine clinical research units (CRU) across the US (outpatient and aftercare). Participants were randomized to one of three therapeutic modalities: (1) Cognitive Behavioral Coping Skills Therapy, (2) 12-Step Facilitation or (3) MET. Sessions were recorded over the 12-week treatment phase. Drinking was assessed weekly during treatment and monthly after treatment completion.

2.2. Intervention

MET was developed originally for Project MATCH and adapts the principles of MI into a four-session format (Miller et al., 1995). MET, like MI, emphasizes the importance of the client's level of motivation for behavior change during treatment. Within Project MATCH, Sessions 1 (Week 1) and 2 (Week 2) focused on generating and consolidating motivation for change. Clients were given feedback on their drinking using the battery of intake assessments. During this phase, they were also encouraged to consider the pros and cons of their current drinking and consider their plans for the future. In Sessions 3 (Week 6) and 4 (Week 12), the therapist tracked the client's alcohol consumption and reinforced progress. As a whole, MET encourages the client to utilize the resources they already have to achieve sustained behavior change, rather than relying on ‘expert’ therapist guidance (Project MATCH Research Group, 1997). Due to the commonality in theoretical basis and treatment strategies between MET and MI, seminal studies have examined MET sessions as a source of insight into MI-based treatment more broadly (e.g. Moyers et al., 2007; Moyers, Martin, Houck, Christopher, & Tonigan, 2009).

2.3. Participants and Session Selection

Each Project MATCH MET participant had the option of including an SO in up to two of the four sessions. ‘SO’ was defined as any member of the social network who was willing and invited to attend a session. SOs with a current diagnosis of alcohol “abuse” or “dependence” (defined according to the Diagnostic and Statistical Manual of Mental Disorders, third edition, revised [DSM-III-R]; APA, 1987) were excluded. Such conjoint treatment would have posed additional challenges for therapists attempting to deliver a brief intervention (Epstein & McCrady, 1998). Overall, SOs participated in 15.28% of MET sessions (Carroll et al., 1998). Participants for the current study were allocated to receive MET at one of two aftercare, Northeast CRUs ($n = 168$) (see Figure 1). Eighteen of these clients invited an SO to attend at least one session. The tape for one SO-client pair was inaudible. Sessions for all available SO-involved clients ($n = 17$) were analyzed. The current study examined Session 2,

or the recording chronologically closest to Session 2 where clients invited their SO on more than one occasion. This focus was informed by the treatment manual which details that clients were 'strongly urged to bring an SO to the first two MET sessions' (Miller et al., 1995, p. 39). Miller and colleagues underscore multiple opportunities for an SO to contribute during Sessions 1 and 2 in particular, but Session 1 involves comparatively more introductory and logistical content than Session 2. For this reason, Session 2 was selected for the analyses.

2.4. Measures

Participant matching variables—A systematic matching procedure was applied to select participants without SO-involved sessions for the matched cohort analysis of alcohol use outcomes. This was designed to reduce the risk of confounding differences at baseline that could arise when using a pseudo-comparison group (e.g., Hunter-Reel, Witkiewitz, & Zweben, 2012). First, the SO-involved and individual-only MET groups were matched according to their total Alcohol Use Disorders Identification Test (AUDIT; Babor et al., 2001) score. The AUDIT assesses the frequency, intensity and negative consequences of alcohol consumption. Second, the Important People and Activities Instrument (IPA; Clifford & Longabaugh, 1991) was applied. The IPA is a self-report measure that assesses the drinking status and attitudes of the client's pre-therapy social network. Participants were matched according to pre-treatment attitudinal support for reduced drinking as indicated by the IPA. Third, the Alcohol Use Inventory (AUI; Wanberg, Horn, & Foster, 1977) assesses the individual's perception of their own drinking. The current study matched individual-only and SO-involved clients according to their raw 'Readiness for Help' score.

In-session language—The Client Language Assessment for Proximal and Distal Targeted Behavior Change (CLA-PD, Magill & Apodaca, 2011) is an observational coding system based on the client portion of the Motivational Interviewing Skill Code (MISC; Miller, Moyers, Ernst, & Amrhein, 2003;2008). Similar to the MISC, the CLA-PD assigns a specific code to each client utterance that focuses on behavior change. Three coding dimensions are applied. Initially, the label 'Reasons', 'Ability', 'Taking Steps', 'Commitment' or 'Other' is used to codify statement type. An additional code identifies valence, that is, whether the statement is for or against behavior change ('Change Talk' and 'Sustain Talk', respectively). Finally, the CLA-PD distinguishes between 'proximal' and 'distal' change statements. The former label represents steps towards behavior change (such as attendance at a self-help meeting), whilst the latter relates directly to engaging or not engaging in alcohol use. The CLA-PD has sound psychometric properties, including "excellent" (Cicchetti, 1994) inter-rater agreement for the Change Talk and Sustain Talk summary scores as well as promising predictive validity for up to 12 months post-treatment (Magill et al., 2013; Magill et al., 2015).

In the current study, the five CLA-PD statement types and the distal-proximal distinction were collapsed. This was intended to ensure comparability with existing research on conjoint MI-based sessions (e.g., Manuel et al., 2012). Ultimately, total Change Talk was analyzed as a proportion of all client utterances (Change Talk/(Change Talk + Sustain Talk + Follow Neutral)). The proportion score approach was also applied for total client Sustain

Talk. This method was designed to control for speaker verbosity, talking speed and session length.

The Motivational Interviewing with Significant Others (MISO) coding system (Apodaca, Manuel, Moyers, & Amrhein, 2007) allows SO speech to be analyzed in conjunction with client speech. In accordance with Apodaca and colleagues' (2013) data reduction strategy, seven discrete SO behavior codes were analyzed using two summary scores. "SO Support Change" is a composite of language in favor of a change in client drinking. "SO Against Change" summarizes language that undermines this treatment goal. Apodaca et al. achieved excellent agreement for both composite SO codes (SO Support Change intraclass correlation coefficient [ICC] = .95; SO Against Change = .82). Whilst the MISO manual assigns a single Encourage/Support behavior code, the current study subdivided E/S into Encourage/Support- General and Encourage/Support- Drinking. McCrady et al.'s (2013) System for Coding Couple Interaction in Therapy- Alcohol [SCCIT-A] coding manual advocates a distinction between statements that do and do not relate directly to the client's drinking behavior. Brovko and colleagues (2013) established "good" inter-rater reliability for each category. See Table 1 for more information about the coding variables used in this study. As outlined for the above client language measures, each composite code was analyzed as a proportion of all SO language (e.g., SO Support Change = (Encourage/Support- General + Encourage/Support- Drinking + Giving Advice + SO Change Talk)/(Encourage/Support- General + Encourage/Support- Drinking + Giving Advice + SO Change Talk + Direct + Confront + SO Sustain Talk + Giving Information- General + Giving Information- Drinking + SO Follow Neutral)).

Alcohol consumption—Form 90 (Miller, 1996) was used to operationalize client drinking as mean drinks per drinking day (DDD; 'intensity') and percentage of days abstinent (PDA, 'frequency'). This calendar-based approach was completed at each wave of data collection, using the last interview date as the start point. As part of the original Project MATCH analysis (Project MATCH Research Group, 1997), DDD scores were square-root transformed and the PDA scores arcsine transformed due to non-normality. PDA and DDD were averaged across three phases: months 1-3, 4-6 and 7-9 post-treatment. Assessment of average drinking across each time period was pertinent for two reasons. First, an AUD can be a chronically relapsing disorder for some sufferers (Sher et al., 2005) and second, Manuel and colleagues (2012) applied this strategy to generate 'proximal' post-treatment PDA and DDD across months 1-6 after Project MATCH therapy.

2.5. Data Collection and Quality Assurance

The SO's in-session language was 'parsed' using the Center on Alcoholism, Substance Abuse and Addictions Application for Coding Treatment Interactions (the CACTI computer program; Glynn et al., 2012). MISO training sessions took place during weekly coding meetings throughout data collection. Group members coded a practice sample of parsed SO speech independently during these sessions. Any points of disagreement were then resolved through discussion and reference to the MISO and SCCIT-A manuals. As a guard against researcher bias (e.g. MISC 2.1; Miller, Moyers, Ernst & Amrhein., 2008) the research assistants (rather than study authors) conducted coding for the sessions included in the final

analysis. Eight of the sessions (47.1%) were selected at random for a "double-code". Using this data, the study followed standard procedures for coder proficiency and reliability assessment (Cicchetti, 1994).

3. Results

3.1. Participant Characteristics

Participants who invited an SO to attend their MET session ranged from 27-74 years old (Mean = 46.88, Standard Deviation = 15.23). One client reported their ethnicity as African American, whilst all others were White. Most clients were male (76.5%). However, the proportion of female clients was greater than in Manuel et al.'s (2012) equivalent analysis of Project MATCH data. The majority of SO-involved clients asked their romantic partner to attend (Cohabiting partner = 17.7%; Spouse = 70.6%). The two remaining participants invited either a parent or fellow Alcoholics Anonymous (AA) member. Session 2 data were available for ten of the clients. Sessions 1 ($n = 4$), 3 ($n = 2$) and 4 ($n = 1$) were analyzed for the remaining clients. Unless otherwise stated, all analyses were conducted using SPSS Version 22.0.

3.2. Reliability

Multiple measures were used to quantify inter-rater agreement for SO speech: intraclass correlations (ICCs), Cronbach's alpha and Pearson's product moment correlations as well as mean frequency and standard deviation recorded per code by each rater, as shown in Table 2. This was designed to ensure a comprehensive and meaningful evaluation of reliability within a small sample. Agreement for the eleven MISO behavior codes ranged from "poor" to "excellent" with the majority (eight of eleven) reaching a threshold of "good" or above (Cicchetti, 1994). The two SO language composite variables, SO Support Change and SO Against Change, were characterized by "good" agreement (ICC = .723; ICC = .716, respectively).

3.3. Sequential Analysis of SO-to-Client Speech

The consecutive client, therapist and SO language codes for each session were entered into General Sequential Querier (GSEQ) software Version 5.1. The GSEQ calculates the odds that one utterance will be followed by another within a specified timeframe ("lag"). A lag length of one utterance was selected to assess the relationship between an SO utterance and the subsequent client utterance. Transition probabilities were calculated on the basis of SO-to-client utterances ($N = 724$, see Table 3), as opposed to all possible transitions (e.g., client-to-therapist utterances; therapist-to-therapist utterances; and client-to-client utterances). This analysis of all "same-type transitions" follows the approach of Gaume and colleagues (Gaume, Bertholet, Faouzi, Gmel, & Daeppen, 2010) and was selected because our specific focus was on how SO behaviors may impact client behaviors. Consistent with the research hypothesis, a highly significant positive relationship was observed between SO Support Change and client Change Talk within the next utterance ($p < .01$). SO Support Change statements were nearly five times more likely to be followed by client Change Talk than any other category of client language.

3.4. SO Language in relation to Client Outcomes (Replication of Manuel et al., 2012)

Manuel and colleagues hypothesized that there would be a predictive relationship between SO Change Talk and client drinking outcomes after MET. Consistent with their null findings, SO Support Change in the current study did not significantly predict PDA or DDD during the first 3 months post-MET (with the relevant baseline drinking measure entered as a covariate on the first step; see Table 4). Equally, SO Against Change was not a significant predictor of either alcohol consumption measure. The same pattern of results was observed for average drinking behavior during months 4-6. Across months 7-9 after MET, again SO Support Change did not significantly predict either drinking outcome. The SO Against Change and baseline DDD model was unique in significantly predicting drinking intensity ($R^2 = 0.39$ $F(2, 12) = 3.91$, $p = .04$). SO Against Change independently accounted for 27.4% of the total variance in DDD. Therefore, clients with an SO who vocalized a higher proportion of anti-behavior change statements would be predicted to consume a greater number of drinks per drinking day across months 7-9 post-therapy. SO Against Change did not predict PDA during this follow-up assessment wave. Each of these observations is compatible with Manuel et al.'s finding that SO Sustain Talk predicted the average intensity but not frequency of client post-treatment drinking.

3.5. SO-Involved vs. Individual MET Comparison

SO-involved clients were matched systematically with a group of client-only counterparts on a participant-by-participant basis. The two groups were similar in key demographic (gender ratio, age, ethnic composition and years in education) and theory-informed characteristics (see Measures, Section 2.4.). Thus, the matching process was successful in minimizing between-group differences. Contrary to the research hypotheses, client-only and SO-involved clients did not differ significantly in their proportion of client Change Talk or Sustain Talk (see Table 5).

4. Discussion

4.1. Findings

The MI ethos emphasizes change language as a mediator along the pathway from therapy to treatment outcome (Moyers et al., 2007). Hence, in the AUD aftercare context examined in this study, the therapist aimed to: (1) elicit client Change Talk within the session, as the psycholinguistic indicator of motivation for behavior change (Magill, Apodaca, Barnett & Monti, 2010) and (2) facilitate a long-term change in drinking behavior. SO involvement was examined as one potential way to facilitate this dual, theory-informed goal. Analyses were designed to be informative at the within and between-group levels.

4.1.1. Within SO-Group Analyses—Sequential analytic findings were compatible with the traditional role of pro-change talk in MI theory. Apodaca and colleagues (2013) observed a strong relationship between SO Support Change language and subsequent client Change Talk from one session decile to the next. The present study replicated and extended this line of research by examining the relationship in a more fine-grained, statement-by-statement analysis. Sequential analyses provide stronger support for causal inference in comparison to cross-sectional methods because they examine SO-to-client language in 'real-time'. Client

Change Talk was nearly five times more likely in the utterance after SO pro-change statements. This finding lends support to the assertion that SO speech may be a "key variable" in eliciting client Change Talk (Apodaca et al., 2013, p. 43). Supportive SOs can assist the therapist in constructing internally motivated behavior change within the client. The current study indicates that the skilled therapist should regulate discussion in a conjoint session to maintain a client-centered, pro-abstinence message. Manuel and colleagues (2012) have suggested "*selective* [SO] *screening*" (p. 8) as another option. After conducting a clinical cost-benefit analysis, therapists may decide that a specific SO is unable to play a constructive role in the therapeutic process.

The present examination of client drinking behavior after therapy was less consistent with the theorized role of Change Talk. Average client alcohol consumption was examined across three, 3-month intervals after MET completion. The sequential link between SO Support Change and client Change Talk has already been noted *within* the session. A long-term role for this pro-abstinence SO language in predicting drinking after MET was not supported. By contrast, SO Against Change was a significant predictor. These anti-behavior change SO utterances independently accounted for over one quarter of the variance in client DDD (drinking intensity). How can these findings be explained? A parallel may be drawn with a recent meta-analysis designed to test the causal pathways of MI (Magill et al., 2014). Across 12 studies, therapist MI-consistency was related to increased client Change Talk but did not significantly predict behavior change. Therapist MI-*in*consistency was related to increased Sustain Talk as well as decreased Change Talk during the session. Moreover, such therapist language that undermined the MI ethos predicted poorer behavior change outcome. Therapist and SO language that challenges the treatment goal appears to be particularly detrimental for client recovery.

Moyers and colleagues (2009) have outlined one school of thought; that client pro-change statements 'may be the bellwether for eventual change... in much the same way that smoke indicates fire' (p. 1115). It could be inferred that therapist-client (e.g. Magill et al., 2014) and SO-client (e.g. Manuel et al., 2012) findings call into question the extent to which client Change Talk is truly an "active ingredient" of MI. Change Talk may be a proxy measure for the level of client motivation that actually affects treatment outcomes. It would then be logical that SO Support Change predicts Change Talk, but Change Talk does not necessarily predict post-treatment drinking.

From an alternative perspective, the potential for '*disingenuous change talk*' (Miller & Rose, 2009, p. 11) must be considered. Amrhein and colleagues (Amrhein, Miller, Yahne, Palmer, & Fulcher, 2003) examined client language during a single MI session in relation to drug use outcomes across the 9 months after baseline. Strength of commitment-to-change language predicted whether a client went on to achieve a high or low-to-moderate level of post-treatment PDA (drinking frequency). It is important here that the *frequency* of this change talk measure did not significantly differentiate the groups. A comparable in-session social desirability effect among SOs may account for the current findings. SO Support Change is designed to capture a genuine pro-behavior change stance. Some SOs may have vocalized these statements within the MET session simply to present outward compliance. It is plausible that this would limit the predictive power of language in favor of sobriety.

Conversely, SO Against Change statements explicitly challenge the therapeutic goal. It could be argued that such candor is more likely to reflect the SO's enduring attitude towards the client's alcohol consumption. Therefore, this study contributes to an ongoing and complex discussion surrounding the role of change language in MI-based treatment.

4.1.2. Between-Group Analyses—SO-involvement, relative to client-only therapy, did not have a facilitative or hindering influence on client Change Talk because the two treatment groups did not differ in their overall proportions of change language. Vedel, Emmelkamp and Schippers (2008) observed that ABCT sessions were longer than the traditional one-to-one format of therapy. This highlights that it may be challenging to balance the contributions of three speakers within a session. For instance, it may be inevitable that SO speech restricts the time allowed for client Change Talk. Nevertheless, here, the average SO-involved session was less than 5 minutes longer ($M = 71.29$ minutes long, $SD = 10.56$) than in the client-only condition ($M = 67.94$, $SD = 12.38$) and Change Talk proportion was equivalent between the two groups. This null finding indicates that a reduction in talk-time need not undermine clients' exploration of behavior change.

4.2. Coding Decision Rules and Reliability

Although the disaggregated MISO codes were not analysed in the current study, inter-rater agreement lends support to the new E/S Drinking vs. General division. Manuel et al. (2012) reported E/S reliability (without subdivision) as "poor". The current study achieved "good" inter-rater agreement for E/S-General (encouraging, supportive and/or appreciative SO statements that relate to the client as a person) and "excellent" for E/S-Drinking (encouraging, supportive and/or appreciative SO statements that refer directly to the client's drinking behavior). Thus, McCrady and colleagues' (2013) new conceptual distinction appears feasible in practice. Group coding sessions also highlighted a Discuss Self-Encourage/Support boundary category. At times, SOs referred to personal experience in an empathetic manner. One SO made the following statement from their perspective as a recovering alcoholic and fellow AA member:

You get sober and you don't have that booze anymore and you have to feel all your feelings, well this is just for me, and if I was in a situation like that [referring to the client's home environment] I don't think I could have stayed sober through it.

As in the SCCIT-A manual (McCrady et al., 2013), future versions of the MISO could use examples to prepare coders for this anecdotal nuance of E/S.

4.3. Limitations and Future Directions

Secondary analysis—The therapeutic role of SOs was not relevant to the original Project MATCH aims. Clients who self-selected into SO-involved therapy may have had a specific profile, introducing a level of bias to the between-group analyses in particular. The study was designed with awareness of this limitation. The comprehensive battery of Project MATCH baseline assessments enabled a matching procedure. This ensured that the two groups were comparable on key variables. A randomized control trial may not be feasible due to the importance of client choice in SO MET involvement. A natural next step would be a cohort analytic study planned specifically to investigate the role of SOs in MET.

Sample size and generalizability—The current sample size could have been problematic on three grounds. First, the study may have been under-powered to fully realize its comparative and multi-variable research aims. Second, reliability for SO Change Talk and SO Sustain Talk was sub-fair. Owens and McCrady (2014) noted this challenge in their analysis of ABCT. They observed lower reliability for SO Change and Sustain Talk ($ICC = .51$ and $.27$, respectively) relative to client codes. As SOs talk less during MET sessions, low frequency may magnify points of between-rater inconsistency. Third, 17 participants cannot be representative of all clients in treatment for an AUD. There was insufficient SO diversity to explore a moderator effect of SO type on client language and drinking behavior. This research question would be of interest to clinicians as they discuss treatment options in collaboration with their clients. Similarly, one SO-involved client classified their ethnicity as non-white. Such limited demographic range reduces the generalizability of findings. In sequential data, the utterance-utterance transition is the unit of analysis ($N = 724$). Hence, results from these analyses can be discussed with greater authority.

Lag length—The one-utterance lag length applied in the current study was designed to build upon existing sequential analyses conducted at the session decile level (e.g., Apodaca et al., 2013). This approach is valuable because it allows researchers to infer an SO-to-client direction of effect with more confidence. However, such a restricted focus may neglect the SO's impact throughout the session as a whole. During the real-world flow of discussion between three speakers, SO statements may have a delayed rather than/as well as immediate effect. Houck and colleagues (Houck, Moyers, Glynn, & Manuel, 2012) have advocated a supplementary "time window" strategy. Within this more flexible method, the lag time could be specified as $s+2$ or $s+3$ (where 's' is the SO utterance at time point 0) to examine whether SO behavior might impact client language two or three utterances later. This strategy could retain the specificity achieved in the current study, while not constraining analyses to the immediately subsequent statement.

SO-involved MET vs. ABCT—Given that the majority of clients invited their romantic partner, future research could evaluate whether SO-involved MET makes a unique contribution, relative to ABCT. ABCT is administered over 12-20 weekly, 90-minute sessions (National Registry for Evidence-Based Programs and Practice, 2014). It aims to achieve client abstinence *and* enhance relationship satisfaction. MET is delivered in a brief four-session format. Client sobriety is its sole target, whilst SOs are acknowledged as a source of motivation and support for behavior change (Miller et al., 1995). Therefore, conjoint MET is unlikely to be effective if it attempts to replicate couples therapy within a limited timeframe. Qualitative in-session observations and clinician interviews could determine whether this discriminability of treatment goals is tenable in practice.

5. Conclusions

The current research questions were stimulated by the well-documented role of the social network in the onset, maintenance and treatment of AUDs. Findings have relevance for the delivery of SO-involved MI and MET, as well as the design of future research. Together, SO advice, encouragement and an emphasis on the motivating features of sobriety increased the likelihood of client Change Talk during the session. Theory and existing research have

implicated a mediating role for these client pro-change utterances, as a bridge from therapist MI-consistency to reduced drinking. It was notable in the present study that this proposed model was not supported for SO involvement. Both Manuel and colleagues' study and summary level MI meta-analytic research (Magill et al., 2014) support our finding of a clearer role for anti-compared to pro-change language. Therefore, continued academic discussion is needed regarding the role of Change Talk in the 'bigger picture' of MI effectiveness. This is an emergent theme from the current study, as well as an ongoing debate within the wider field of treatment process research.

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Highlights

- We use Project MATCH data to examine sequential associations between the speech of clients and their significant others during Motivational Enhancement Therapy (MET) for alcohol use disorders.
- We model the potential impact of significant other language during an MET session on client drinking over the 9 months after treatment.
- Significant others' language in support of behavior change increases the odds of subsequent client Change Talk within the therapy session by nearly five times.
- Significant others' anti-behavior change language predicts increased client drinking intensity across months 7-9 after therapy.

Figure 1.
Participant flow from Project MATCH to current study

Table 1

MISO Coding System: Significant Other Behavior Codes

Code	Description	Examples
<i>"SO Support Change" ¹</i>		
Encourage/Support - General (ES-G)	Statements that are <u>generally</u> encouraging, supportive and/or appreciative of the client as a person and not directly related to their drinking	<i>"You're a good father"</i>
Encourage/Support-Drinking-Related (ES-D)	Statements that are encouraging, supportive and/or appreciative of the client and relate <u>specifically to their drinking</u>	<i>"I'll give him a ride to his counselling appointments if he needs it."</i>
Giving Advice (GA)	Advice, suggestions, possible solutions or actions that could aid the client's behavior change	<i>"You could try going to AA"</i>
SO Change Talk (SOCT)	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	<i>"He's got a level head when he's sober"</i> <i>"I think he's determined to quit this time"</i>
<i>"SO Against Change" ¹</i>		
Direct (DI)	The SO gives an order, command, or direction using imperative language	<i>"You've just gotta change your ways!"</i>
Confront (CO)	Language that conveys disapproval, disagreement, or negativity; the SO directly argues, shames, or blames the client	<i>"You knew it was stupid to drive after you'd had that much to drink."</i>
SO Sustain Talk (SOST)	Language that minimizes the severity of the client's drinking, refers to barriers to behavior change, or highlights positive aspects of the client's drinking	<i>"It's not like he drinks to get drunk every day"</i> <i>"I don't think he <u>can</u> stop"</i>
Discuss Self (DS)	The SO provides information about himself/herself, including references to their own drinking that do not include the client	<i>"Sometimes I just get fed up with things"</i> <i>"I don't drink anymore"</i>

Note. Examples and descriptions taken from MISO coding manual (Apodaca et al., 2007) and Apodaca et al. (2013). SO codes were analyzed as proportion scores e.g. SO Support Change = (ES-G + ES-D + GA + SOCT)/(ES-G + ES-D + GA + SOCT + DI + CO + SOST + DS + FNSO)

¹In accordance with Apodaca et al.'s (2013) data reduction strategy, "SO Support Change" and "SO Against Change" were used to summarize SO language in favor of and opposed to abstinence from alcohol, respectively.

Table 2

Inter-Rater Reliability for SO language codes

Language Code	<i>M</i>		<i>SD</i>		ICC	α	<i>r</i>
	Coder 1	Coder 2	Coder 1	Coder 2			
<i>SO Support Change</i>	46.50	46.63	17.91	11.29	.723*	.870	.770
Encourage/Support- General	3.50	5.13	3.82	2.90	.652*	.843	.729
Encourage/Support- Drinking	10.75	11.50	9.78	9.02	.950**	.974	.950
Giving Advice	3.25	2.75	2.38	2.61	.605*	.741	.589
SO Change Talk	29.00	27.25	9.44	6.04	.214 [^]	.358	.218
<i>SO Against Change</i>	12.38	21.25	11.49	20.38	.716*	.967	.936
Direct	1.50	3.13	1.77	2.95	.011 ^{^^}	.027	.010
Confront	7.25	9.25	9.52	11.15	.883**	.946	.898
SO Sustain Talk	3.63	8.88	2.56	8.76	.287 ^{^^}	.800	.667
Discuss Self	20.50	26.88	11.61	19.33	.810**	.988	.975
Giving Information- General	25.13	22.75	15.39	11.12	.734*	.862	.758
Giving Information- Drinking	22.25	13.50	14.64	7.21	.618*	.991	.983
Follow/Neutral	15.63	11.38	10.10	8.30	.853**	.977	.955

Note. Reliability statistics represent data from the subset of eight sessions selected at random to assess inter-rater agreement. Mean (*M*) and Standard Deviation (*SD*). ICC = Single measures intra-class correlation; α = Standardized item alpha; *r* = Pearson's product moment correlation. ICC interpretation (Cicchetti, 1994):

[^] = Fair (.40-.59);

^{^^} = Poor (<.39);

^{*} = Good (.60-.74);

^{**} = Excellent (.75-1.00). "Fair" or higher agreement highlighted in **Bold**.

Table 3

Transition Analyses for SO-to-Client speech

Initial Event→ Subsequent Event	Joint Frequencies	Conditional Probabilities	Expected Frequencies	<i>p</i>	OR	95% CI for OR
SO Support Change→ Client Change Talk	68	0.32	33.12	<.01	4.97	3.25, 7.60
SO Support Change → Client Sustain Talk	9	0.04	14.62	.07	0.51	0.24, 1.07
SO Against Change → Client Change Talk	10	0.13	12.27	.46	0.77	0.38, 1.54
SO Against Change → Client Sustain Talk	7	0.09	5.41	.45	1.37	0.60, 3.17

Note. Significant results indicated in **Bold**, *p* .05. SO → Client represents lag of one utterance.

OR > 1 = the selected client code is significantly more likely than would be estimated by chance following the given SO code. OR < 1 = significantly reduced probability.

For the sake of clarity, only those SO and client codes with direct relevance to the research aims are reported. Transitional analyses for disaggregated SO Change Talk and SO Sustain Talk are not reported because inter-rater reliability was sub-fair for each of these discrete codes.

Table 4

Proportion of SO Support/Against Change Predicting Drinking

	Months 1-3 ^a				Months 4-6 ^b				Months 7-9 ^c			
	β	p	95% CI		β	p	95% CI		β	p	95% CI	
			Lower	Upper			Lower	Upper			Lower	Upper
Baseline PDA	-0.11	.61	-0.57	0.34	-0.33	.34	-1.04	0.38	0.26	.47	-0.51	1.03
SO Support Change	0.64	.49	-1.30	2.59	2.31	.12	-0.73	5.35	2.21	.17	-1.08	5.50
Baseline PDA	-0.04	.82	-0.44	0.35	-0.10	.74	-0.73	0.53	0.48	.15	-0.20	1.16
SO Against Change	-3.81	.16	-9.27	1.65	-8.26	.06	-16.91	0.39	-8.24	.08	-17.56	1.08
Baseline DDD	-0.13	.78	-1.07	0.82	-0.30	.58	-1.42	0.83	-0.36	.33	-1.14	0.42
SO Support Change	1.53	.73	-7.98	11.04	0.35	.95	-10.92	11.61	-4.43	.24	-12.26	3.40
Baseline DDD	-0.10	.82	-1.01	0.81	-0.31	.55	-1.38	0.76	-0.51	.12	-1.18	0.15
SO Against Change	7.40	.60	-22.09	36.88	10.53	.52	-24.08	45.13	23.02	.04	1.48	44.56
<i>n</i>	16				15				14			

Note. p .05 highlighted in **Bold**. SO Support Change and SO Against Change represent each language code as a proportion of total SO utterances. β values reported for final hierarchical regression models. Where clients were lost to follow-up, models were trialed with the mean method of imputation and pairwise deletion. Pairwise deletion analyses are reported as there were no notable differences in the results.

^aMonths 1-3 post-MET- SO Support Change PDA Model: $R^2 = 0.01$ for Step 1, $R^2 = 0.04$ for Step 2. SO Against Change PDA Model: $R^2 = 0.01$ for Step 1, $R^2 = 0.15$ for Step 2. SO Support Change DDD Model: $R^2 = 0.00$ for Step 1, $R^2 = 0.01$ for Step 2; SO Against Change DDD Model: $R^2 = 0.00$ for Step 1, $R^2 = 0.02$ for Step 2.

^bMonths 4-6 post-MET- SO Support Change PDA Model: $R^2 = 0.01$ for Step 1, $R^2 = 0.17$ for Step 2. SO Against Change PDA Model: $R^2 = 0.01$ for Step 1, $R^2 = 0.24$ for Step 2. SO Support Change DDD Model: $R^2 = 0.03$ for Step 1, $R^2 = 0.00$ for Step 2. SO Against Change DDD Model: $R^2 = 0.03$ for Step 1, $R^2 = 0.03$ for Step 2.

^cMonths 7-9 post-MET- SO Support Change PDA Model: $R^2 = 0.12$ for Step 1, $R^2 = 0.13$ for Step 2. SO Against Change PDA Model: $R^2 = 0.12$ for Step 1, $R^2 = 0.21$ for Step 2. SO Support Change DDD Model: $R^2 = 0.12$ for Step 1, $R^2 = 0.10$ for Step 2. SO Against Change DDD Model: $R^2 = 0.12$ for Step 1, $R^2 = 0.27$ for Step 2.

Table 5

Results of t-tests Comparing Proportion of Client Change Language in the SO-Involved and Client-Only Groups

Client Language Code	SO-Involved Group		Client-Only Group		<i>t</i> -test
	<i>M</i> (%)	<i>SD</i>	<i>M</i> (%)	<i>SD</i>	
Change Talk	30	0.11	35	0.10	-1.46
Sustain Talk	10	0.07	11	0.09	-0.32

Note. *p* .05 applied as threshold for significant between-group difference.

To ensure that talk-time did not confound results, each client language code was analyzed as a proportion of all client utterances.