

“How does a therapist respond to resistance and what impact does this have on the client? An analysis of speech in Motivational Interviewing based treatment sessions for alcohol misuse.”

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The candidate confirms that the work submitted is her own and that appropriate credit has been given where reference has been made to the work of others.

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Abstract

Background: There is an emerging evidence base of in-session process research in Motivational Interviewing (MI). Investigations have mostly taken place in the USA, have progressed from frequency to sequential analysis, and focused on change talk and change outcomes. Research focusing on how a therapist behaves in the presence of counter-change talk is rare but pertinent, since managing resistance is a central feature of the MI model. This investigation aims to discover if and how MI-specific therapist strategies affect immediate client counter-change talk.

Method: Secondary analysis of 50 recorded MI sessions from a British randomised controlled trial were rated using a sequential behavioural coding manual for speech. Baseline counter-change talk was identified and subsequent therapist and client behaviours were coded and categorised for transitional analysis, to establish the probability of specific client behaviours following specific therapist behaviours.

Results: Following baseline counter-change talk, therapist MI-consistent (MICO) behaviours were the most commonly observed. Strong to moderate predictive relationships were found between: MICO therapist behaviours and client change talk; MI-inconsistent (MIIN) behaviours and counter-change talk; and therapist-other behaviours and client-other behaviours. A moderate, positive predictive relationship was found between MI-consistent behaviours and client ambivalence, and a weak, negative predictive relationship was found between MIIN behaviours and client ambivalence. Ambivalence results indicate, but cannot evidence, an increase in change talk.

Discussion: The results provide support for MI authors' claims that therapists' use of MI-specific linguistic techniques, not simply the MI spirit, affects clients' subsequent talk about their drinking behaviour. These results were found when examining transitions between

aggregated behaviours. This novel finding differs from contemporary research that has evidenced transitions between single utterances. The support for MI-specific techniques has therefore been extended to evidence patterns of multiple interactions. Further research with a larger sample, examining clients' impact on therapist behaviour would be beneficial.

Key words: alcohol, ambivalence, change talk, counter-change talk, drinking, resistance, motivational interviewing, observation, process, sequential.

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List of Abbreviations

AMBIV: Ambivalence

CACTI: CASAA Application for Coding Treatment Interactions

CCT: counter-change talk

CI: Confidence Interval

CT: change talk

CLOther: Client Other (speech)

CR: Complex Reflection

CQ: Closed Question

GSEQ: Generalized Sequential Querier

MET: Motivational Enhancement Therapy

MI: Motivational Interviewing

MICO: MI-consistent

MIIN: MI-inconsistent

MI-SCOPE: Motivational Interviewing Sequential Code for Observing Process Exchanges

NHS: National Health Service

RCT: Randomised Controlled Trial

SDT: Self-determination Theory

SR: Simple Reflection

TM: Transtheoretical Model

TOther: Therapist other (speech)

UKATT: United Kingdom Alcohol Treatment Trial

1. Literature Review

1.1 Introduction

This thesis begins with a review of theoretical literature about resistance in therapy and techniques for managing it. There will be a specific focus on theory and techniques most influential in the development of Motivational Interviewing (MI). This is followed by an explanation of MI and its approach to managing resistance. A summary of theories and empirical evidence about addiction, including evidence that MI is an acceptable treatment for alcohol dependence, is outlined. The literature review concludes with an appraisal of research specifically relating to within-session behaviours (process research) and explains how the existing literature has influenced this thesis' research question.

1.2 The concept of resistance

Resistance is a term that has been used for decades within the fields of psychotherapy and medicine. It implies that an individual is not making progress or choosing not to improve their situation (Freud, 1959). Freud (1900/1953, cited in Adler & Bachant, 1998) was the first to write about resistance, describing it as “whatever interrupts the progress of analytic work” (p517). Different schools of psychology have developed their own understanding of resistance in order to manage and resolve resistance.

Cognitive therapists understand resistance as a client's way of protecting their core beliefs, attitudes and perceptions about others and the world. An intervention, or new information, may be opposed or ignored if the client views this change (or its implications) as threatening (Cowan & Presbury, 2000; Lord, Ross, & Lepper, 1979; Mahoney, 1991). Clients and therapists are equally responsible for creating client resistance (Newman, 2002) and discrepancies between their respective subjective worlds contribute to its formation (Beitman, 1992; Cowan & Presbury, 2000). Authors from the CBT field provide detailed descriptions of

managing resistance which MI therapists may draw upon (e.g. collaboration, compromise, psychoeducation and providing choices). Cognitive strategies maximise client self-direction and enable the client to make informed decisions about therapy. At the same time, however, there is also an element of direction and persistence from the cognitive therapist (Newman, 1994).

Although many psychological models (psychoanalytic, psychodynamic, relational, systemic and Gestalt) report that resistance emerges through the client's interaction with others and their environment, the social psychological perspective on resistance has influenced the MI perspective more than any other. Social psychologists, Jones and Harris (1967), found that individuals tend to make the fundamental attribution error of explaining other people's behaviour as arising from internal traits rather than situational causes. Viewing resistance as a client trait, rather than a behaviour influenced by life circumstances or therapeutic conditions, is perhaps making the same error. The client may view themselves as lacking control over their behaviour in a given situation, rather than deliberately being noncompliant, which is an attribution the therapist might make (Kirmayer, 1990). The discrepancies between the client's and therapist's attributions can further magnify resistance. The client can feel misunderstood and the therapist can feel frustrated. Managing resistance involves re-attributing trait problems as situational ones, thereby minimising reactance (Beutler, Moleiro, & Talebi, 2002; Brehm, 1966; Miron & Brehm, 2006).

MI is also influenced by a Rogerian, humanist, approach. This describes resistance as an obstacle preventing awareness of threats within their inhospitable environment, that is, one that conflicts with the individual's current self-organisation (Rogers, 1951; 2012). Responding with defensive behaviours distorts or prevents the perceived experience (threat) from taking full effect. This may help the client find stability for their way of being in the world (Bugental & McBeath, 1995) but potentially gives the client a faulty understanding of

their environment. Humanist psychologists trust that empathic, client-centred pacing and discussion facilitating resolution of barriers to change is sufficient, as it enables the client to build self-efficacy and self-actualise (Maslow, 1973). However, if the client continues to work against change, this approach offers no resolution; the client has the right to refuse support.

Psychoanalytic, Systemic, Gestalt and Relational models all endorse a non-judgemental approach to resistance recognising that maintaining the status quo is a natural coping response to the potentially traumatising prospect of change (Cowan & Presbury, 2000; Engle & Holiman, 2002; Messer, 2002). Psychoanalysts go further stating that resistance highlights the problem area for therapeutic focus (Schlesinger, 1982; Schultz & Schultz, 2011; Wachtel, 1993). Psychoanalysts and Gestalt therapists explain resistance as unconscious, intrapsychic conflicts in motivation, which may underlie ambivalence (Engle & Holiman, 2002). Psychoanalysts discuss resistance in terms of character defences (Coughlin Della Selva, 2006; Davanloo, 1980; McCullough et al., 2003) against a fragile ego (Freud, 2011) and emphasize transference and countertransference effects of the therapeutic relationship (Beutler et al., 2002; Ferenczi, 1919, cited in Martin Cabre, 1998; Messer, 2002; Verhulst & van de Vijver, 1990). These theories highlight the importance of an edifying therapeutic alliance.

Resistance is a broad term to describe behaviour that results from incongruent or conflicting motivations. This can be experienced internally (within the client's mind) relationally (between the client and other people) and externally (between the client and their environment). The definition of resistance includes reactance, reluctance, avoidance and indecision about change.

1.3 Resistance: Negatives and positives

Whatever the psychological approach to resistance, most encourage therapists to resolve resistance. The complex nature of resistance means that this is challenging. Ineffective management can result in a “therapeutic impasse” (Weiner, 1974, p.258) which can be costly for the NHS.

Some authors have observed that the therapist’s best efforts to overcome reluctance to change have exacerbated resistance. Clinician behaviours perceived by the client as exerting pressure, direction, structure or unwanted influence can create the opposite of the desired effect; an enhanced oppositional attitude (Biondo & MacDonald, 1971; Brehm & Brehm, 1981; Carver, 1977; Karno, Longabaugh, & Herbeck, 2010; Kilmayer, 1990; Miller, 1976; Silvia, 2006; Verhulst & van de Vijver, 1990).

The presence of resistance is not solely problematic. Slow or seemingly reluctant progress from the client may indicate a client’s “protective wisdom” (Cowan & Presbury, 2000, p412). Change can be traumatic for individuals and resistance may be a valid coping response (Dolan & Erickson, 1985; Messer, 2002). Understanding resistance as an adaptive pattern enhances therapist empathy and respect for clients.

Table 1 gives a simple overview and comparison of some different interpretations of resistance. The aspects of resistance and ratings were developed from the author’s interpretation of reports from a systematic search of available literature for each of the different approaches. This included reviewing: definitions, which aspects of resistance were emphasised, and descriptions of interventions to manage resistance.

Table 1. Comparison of approaches to resistance of different psychological models

(Importance of item: ◇ = weak, ◇◇ = moderate, ◇◇◇ = strong)

Views on Resistance	Psychoanalytic psychodynamic	Behavioural	Cognitive	Social & Social Cognitive	Organizational	Systemic	Gestalt	Existential / Humanist	Relational
Normal (do not judge negatively)	◇	◇	◇	◇◇	◇	◇◇	◇◇◇	◇◇◇	◇◇◇
Indicator of poor alliance	◇◇◇	◇◇	◇◇	◇◇◇	◇	◇◇	◇◇	◇◇◇	◇◇
Internal to client	◇◇	◇	◇◇	◇	◇◇	◇	◇◇	◇◇	◇
Environment & Therapist = important	◇◇	◇◇◇	◇◇	◇◇◇	◇◇◇	◇◇◇	◇◇	◇◇◇	◇◇◇
Protection from threatening change	◇◇◇	◇◇	◇◇◇	◇	◇◇◇	◇◇◇	◇◇◇	◇	◇

Need to maintain status quo	◇	◇	◇	◇◇	◇◇◇	◇◇◇	◇	◇	◇
Different agenda to therapist	◇◇◇	◇◇	◇◇◇	◇◇	◇◇	◇◇	◇◇	◇◇	◇◇
Response to restricted freedom	◇	◇◇	◇◇	◇◇◇	◇◇◇	◇◇◇	◇◇	◇◇	◇◇
Reduces / delays positive change	◇◇◇	◇◇◇	◇◇◇	◇◇◇	◇◇◇	◇◇◇	◇◇◇	◇◇◇	◇◇◇
Work with (not against) resistance	◇◇	◇	◇◇	◇	◇	◇◇	◇◇◇	◇◇	◇◇
Resistance can be overcome	◇◇	◇◇◇	◇◇	◇	◇	◇◇	◇◇	◇	◇◇

1.4 Evidence for strategies of managing resistance

There is a range of published therapeutic techniques for managing resistance. Evidence of the effectiveness of these techniques across different therapies is outlined below.

Karno et al. (2010) recommend altering the structure of therapy. They found that clients with high resistance levels gained superior therapeutic outcomes with a loose structure compared with rigid structure to therapy sessions. The authors found the reverse pattern for low-reactance participants.

The therapist's style is also crucial. Patterson and Forgatch (1985) found resistance increased with a directive style and decreased with reflective counselling. Rains and Turner (2007) concluded that persuasive, explicit or dogmatic language elicits a stronger reactance response as it communicates a lack of choice for the individual. Similar findings were reported by Miller, Benefield, and Tonigan (1993) who compared the effects of therapists delivering opposing therapist styles; one used confrontation and persuasion (the directive-confrontational style), the other offered understanding, reflection and evoked the client's concerns (the client-centred counselling style). Participants in the client-centred condition verbalised twice as much change talk and half as much resistance as the alternative approach.

Kivlighan, Multon and Patton (1996) investigated whether and how resistance should be addressed in therapy. In contradiction to Miller they found that highlighting and interpreting resistance did not increase it but exploring and working through the topic did correlate with decreased resistance in the following two sessions. Mixed findings from this study suggest that there is still ambiguity about the most effective way to resolve resistance. Further research in this area is therefore important.

Speisman (1959) investigated three different techniques of resistance management. Their experimental study found that the depth of a therapeutic interpretation affected clients' resistance speech. Moderate interpretations, such as presenting the client's information in a new context, correlated with the least amount of client resistance. It also correlated with reduced client resistance speech when it followed either: therapists' superficial interpretations, such as a restatement or slight modification of client's speech; or therapists' deep interpretations, such as using material outside of the client's awareness.

These findings reveal limitations to both extremes of either non-directive or highly directive approaches. Although the client-centred principles benefit alliance and yield positive therapeutic results (Stiles et al., 2008) this style alone can potentially lead to resistance never being resolved. Further resistance may be generated by superficial interpretations or a lack of therapeutic progress.

MI aims to address the balance of client-centred and therapist-directed work by using a person-centred approach with carefully selected, directive cognitive techniques, influenced by social psychological theories. This thesis is investigating the use of MI therefore it is beneficial to first explore how it was developed, including its theoretical foundations.

1.5 Influences on MI

Several theories and one key therapeutic approach are influential on MI and expound the principles and behaviour of the MI therapist. The following section describes these influences.

1.5.1 Person-centred counselling

This therapeutic style is non-directive, incorporating unconditional positive regard and genuine 'accurate empathy' enhancing client self-efficacy (Rogers, 1957). It forms the foundation of the MI therapeutic relationship but MI differs in that it is purposefully directive,

particularly in relation to developing discrepancy between the client's values and their behaviour (Miller & Rollnick, 1991, 2009; Rollnick & Miller, 1995). MI also draws on several social cognitive theories.

1.5.2 Transtheoretical Model of behaviour change

MI authors (Miller & Rollnick, 1991; 2004) acknowledge the Transtheoretical Model of behaviour change (TM) (Prochaska, 1994; Prochaska & DiClemente, 1983; Prochaska & Norcross, 2001; Prochaska & Velicer, 1997) as influential for MI. The model recognises that readiness to change may develop slowly and fluctuate. Miller and Tonigan (1996) developed a scale measuring readiness based on TM.

TM explains behaviour change as a seven-stage, cyclical process and includes a stage where there is a lack of recognition that change is necessary; precontemplation. The authors also acknowledge difficulty in moving between the other stages of behaviour change; contemplation, preparation, action and maintenance and note the possibility of relapse. Rollnick and Miller (1995) regard motivational interviewing as a suitable therapy for individuals who may be stuck in the contemplation stage. They view the role of an MI therapist as someone to assist the client to work through the subsequent stages.

1.5.3 Self-perception and Cognitive Dissonance

It has been noted that the Self-perception and Cognitive Dissonance theories are contradictory (Greenwald, 1975) however, both in different ways provide a rationale for the MI approach.

Bem (1967) and Bem & McConnell (1970) developed the self-perception theory. They proposed that people self-monitor (use evidence from their observed behaviour, including speech) to infer their own attitudes. Observed behaviour is perceived as less ambiguous to interpret than internal cues. If an individual's attitudes and opinions are

organised around their actions this implies that behaviour is more influential on beliefs than vice versa. This theory is relevant for all talking therapies and indicates the importance of focussing on positive, healthy behaviours; in MI the focus is on eliciting talk about change.

Cognitive Dissonance was a theory designed by Festinger (1962) who proposed that people can hold conflicting views or behave in a way that is inconsistent with their attitudes. This is uncomfortable for individuals and therefore motivates them to seek consonance or consistency. Dissonance creates internal pressure for an individual to adjust either their attitude or their behaviour to reduce discomfort (e.g. avoiding situations, seeking support or counterproductively adopt the attitude that their behaviour is not serious or harmful). Where an individual minimises the seriousness of their behaviour, the MI therapist would encourage the individual to examine the reality of their behaviour to achieve consonance. Festinger's theory implies that individuals' attitudes have a stronger influence on behaviour than Bem's theory suggests. Both portray the individual as an autonomous self-informant, which is key in MI. Psychological reactance theory explains how an individual may be influenced by their environment.

1.5.4 Psychological Reactance Theory

Brehm (1966) and Brehm and Brehm (1981) regard reactance as synonymous with resistance; they developed the psychological reactance theory. The authors described reactance as emerging if an individual perceives a threat to their personal freedom. The individual is likely to attempt to preserve their freedom by avoiding the encouraged behaviours or continuing with those they are being advised against (Buller, Borland & Burgeon, 1998) and this may also result in individuals holding an opinion they would not normally adopt (Rains & Turner, 2007). The therapist should, therefore, enhance their client's personal freedom; a key feature of MI.

Despite the influence of theories on MI, Miller and Rollnick's (1991) model was still criticised for lacking a theoretical foundation. A more sophisticated justification, self-determination theory, was developed to explain MI after the model was published.

1.5.5 Self-determination theory

Self-determination theory (SDT) (Deci and Ryan, 1985; 2010; 2012; Deci, et al., 1994; Ryan and Deci, 2012) proposes that each individual has an innate tendency for the “integration of the self, and the resolution of psychological inconsistency” engaging in challenges in their environments to actualize their capabilities (Deci & Ryan, 1995; cited in Markland et al., 2005, p815). Integration involves constructing interconnections between concepts within an individual's mind (intrapsychically) and between themselves and others (relationally). This requires individuals to be both autonomous (self-regulatory) and homonymous (integrated with others and the environment) (Deci & Ryan, 2012). Both are equally important in SDT. SDT authors propose that individuals have three basic needs for integration and psychological well-being: competence, relatedness and autonomy. An individual gains these needs by interacting with their environment. An enabling environment, including a therapeutic environment, provides the individual with structure, autonomy support and involvement, which mirror these needs.

Substantial evidence supports the notion that autonomously regulated behaviours, those most integrated within a person's core values, are associated with behaviours of enhanced quality, stability, and involved more positive experiences (Ryan & Deci, 2000). In healthcare, client autonomy and intrinsic motivation predicted greater adherence behaviours for diabetes and methadone management leading to positive clinical change outcomes (Williams et al., 2004; Zeldman, Ryan, & Fiscella, 2004) and increased attendance and engagement in alcohol treatment programmes (Ryan, Plant, & O'Malley, 1995).

SDT is supported by empirical research (Deci & Ryan, 2000; Ryan & Deci, 2000; Williams, Rodin, Ryan, Grolnick, & Deci, 1998) and corroborates with the essence of the MI approach, namely to minimise external regulation or pressure, and encourage the client to generate their own ideas and reasons for change, thus enhancing intrinsic motivation, commitment and integration of positive behaviour change. A summary of how SDT informs MI is illustrated in figure 1 (Markland et al., 2005, p821). Figure 1 shows SDT environmental (relational) needs displayed at the top and psychological needs at the bottom of the diagram. Features of MI that operationalise these SDT concepts rest between them. A description of Motivational Interviewing will then follow.

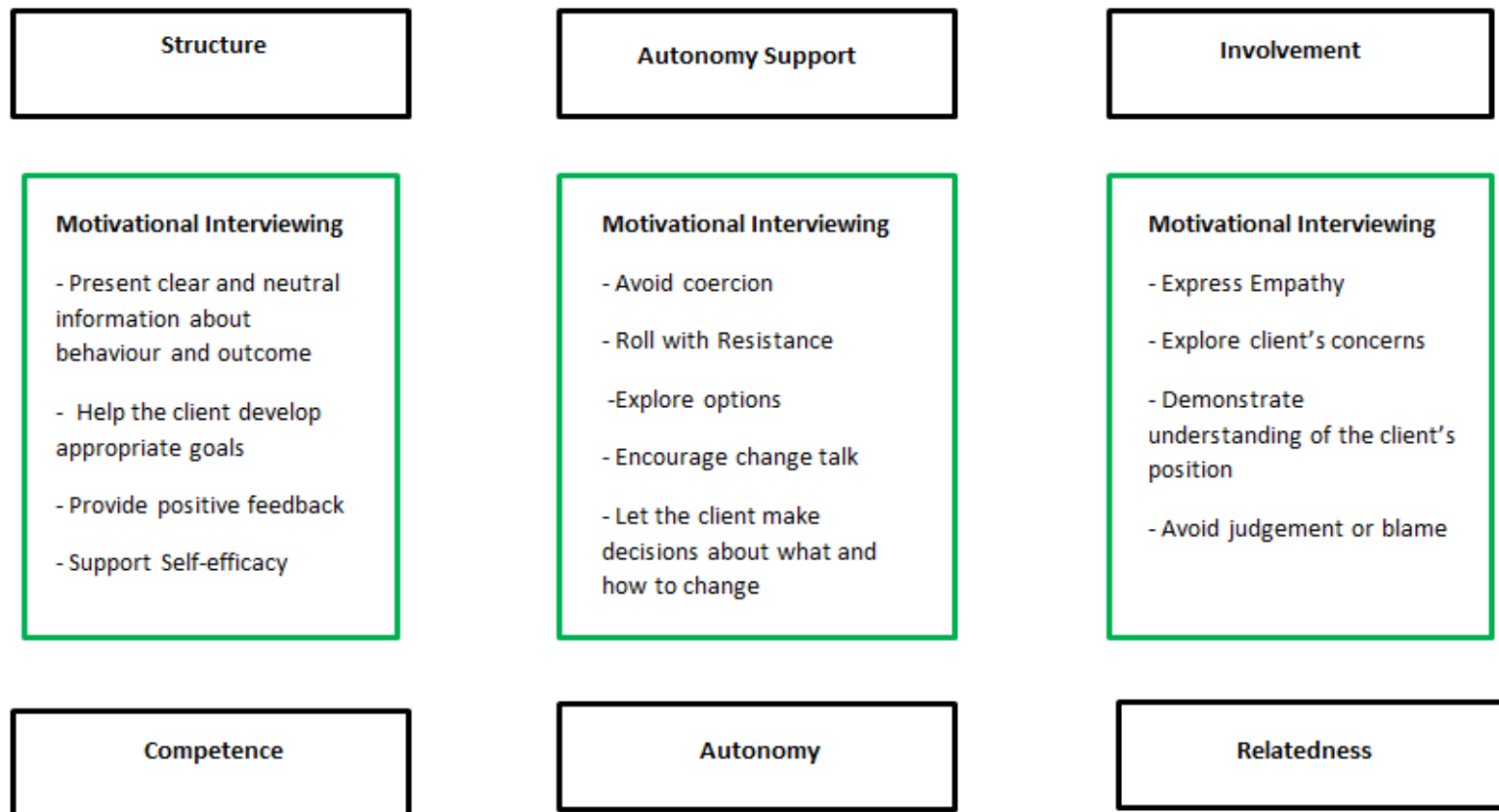


Figure 1. Incorporating the self-determination theory in the practical application of MI

1.6 The origin of MI

Motivational Interviewing was informed by researching practical, therapeutic interventions for problem drinkers (Miller, 1983; Miller & Baca, 1983; Miller et al., 1993; Miller, Taylor, & West, 1980). Miller (1978; 1983), Miller & Baca (1983) and Miller et al. (1993) began developing the MI model primarily as an alternative approach to managing resistance than contemporaneous treatments, that sought to convince or persuade the drinker to change. Miller Taylor and West (1980) found that accurate empathy was significantly correlated with reductions in alcohol consumption and Miller and Baca (1983) found this result was maintained after a two-year follow-up period. The importance of accurate empathy suggested a Rogerian approach as a therapeutic foundation. Miller combined this style with knowledge of social psychological theories such as: SDT; self-perception theory; attribution; dissonance; self-efficacy and the trans-theoretical model of change to form Motivational Interviewing (Bem, 1967; Brehm & Brehm, 1981; Deci & Ryan, 2012; Festinger, 1962; Prochaska & DiClemente, 1983).

1.7 MI definition

Motivational interviewing is a directive, client-centred therapeutic approach to support and guide clients towards behaviour change by strengthening personal motivation. It involves "...a collaborative goal-oriented style of communication with particular attention to the language of change". The therapist's role is to elicit and explore the individual's reasons for change "within an atmosphere of acceptance and compassion", thereby facilitating the resolution of ambivalence (Miller & Rollnick, 2012, p29). This definition highlights the importance of change language as a key focus for MI. Therefore, research that investigates

the effectiveness of language and client commitment to change is significant for providing evidence for the effectiveness of MI.

1.7.1 MI spirit

The spirit or essence of MI is a general description about the therapists' approach to counselling clients. Figure 2 is an adapted illustration based on Miller and Rollnick's explanation (2013, p17). It includes four elements of the MI Spirit with descriptions for each component. Like Rogerian counselling, the MI therapist views the client as an expert on themselves and the therapeutic relationship is egalitarian (Rollnick and Miller, 1995; 2004; 2012).

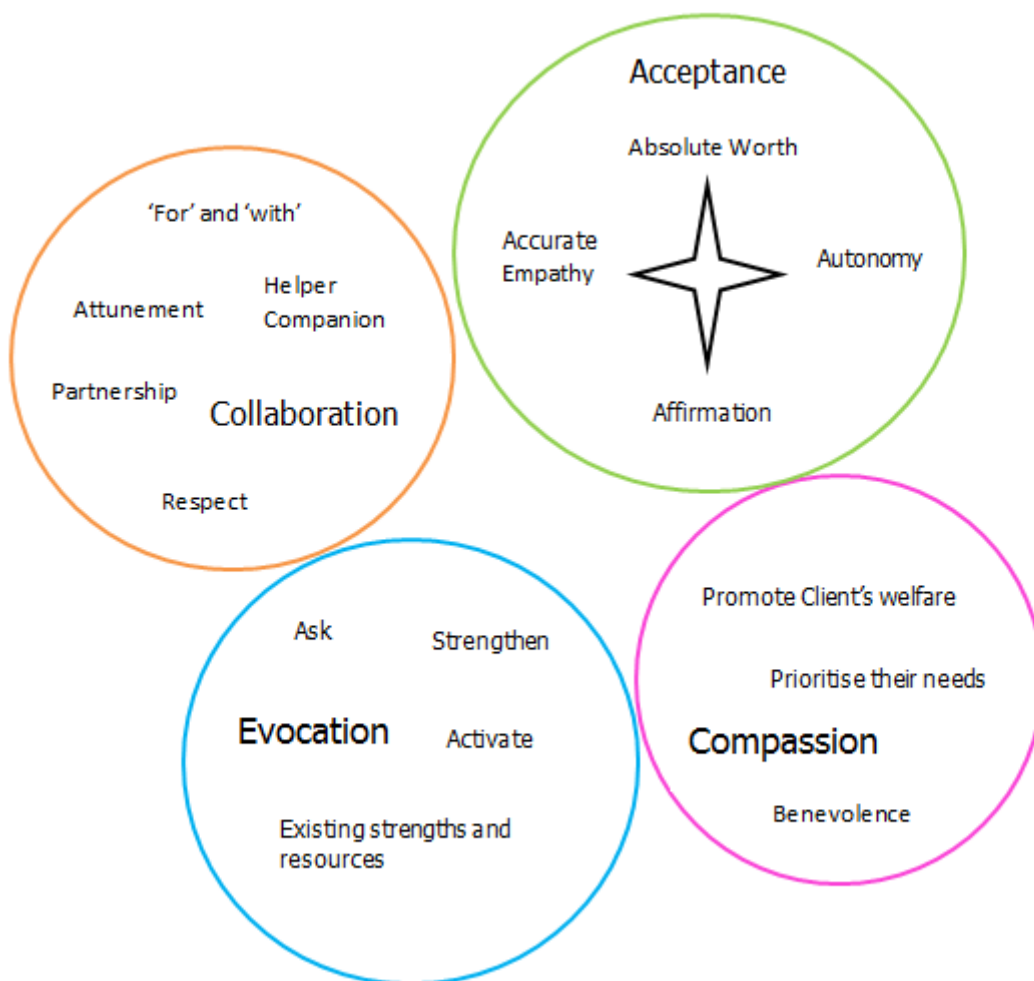


Figure 2. The MI spirit: Key components of the MI approach

1.7.2 MI principles

Rollnick and Miller (1995) describe MI as a therapeutic style rather than set of techniques and developed seven principles that describe it (p326-327);

- 1) “Motivation to change is elicited from the client” not imposed.
- 2) It is the client’s responsibility to articulate and resolve their ambivalence however, the therapist can provide the optimum circumstances for this process.
- 3) Direct persuasion is ineffective for resolving ambivalence and actually increases client resistance, decreasing probability of change (Miller, Benefield and Tonigan, 1993; Miller & Rollnick, 1991).
- 4) The role of the therapist is as a consultant rather than director; they use a “take it or leave it” manner with their feedback (Engle & Arkowitz, 2006, p406).
- 5) The therapist’s style is “quiet and eliciting”,
- 6) However, the therapist is directive in facilitating the client’s examination and resolution of ambivalence.
- 7) “Readiness to change is not a trait, but a fluctuating product of interpersonal interaction.”
- 8) The therapeutic relationship is collaborative and respectful.

The principles of MI therapy are captured in five short phrases (Miller & Rollnick, 2013):

- express empathy
- develop discrepancy
- avoid arguments
- roll with resistance
- support self-efficacy

The spirit and principles underscore therapists' practise, including how they manage resistance. MI uses cognitive strategies within the therapeutic conversation, which MI authors report to be secondary to the MI spirit.

Although the spirit and principles for MI are attractive concepts, how these are translated into therapeutic practice has not always been clear. Figure 3 is a synthesis of MI author's descriptions of the approach and MI therapist behaviours described by Martin, Moyers, Houck, Christopher and Miller (2005). These behaviours are more tangible indicators of how the approach is operationalised.

Motivational Interviewing										
Spirit	Evocation		Compassion			Acceptance			Collaboration	
Principles	Rolling with Resistance		Supporting Self-Efficacy			Express Empathy			Develop Discrepancies	
The Therapist										
Processes	Engaging		Focussing			Evoking			Planning	
Core skills (OARS)	Open Questions		Affirming			Reflection			Summarizing	
Specific Behaviours	(Advise without permission)	Affirm	(Confront)	Emphasize Control	Direct	Feedback	Filler	Self- disclosure	General Information	(Opinion)
	Questions		Permission seeking		Raise concern	Reflect	Support	Structure	Warn	
	Open / Closed					Simple / Complex	Agreement with a twist			

() indicate MI inconsistent behaviours

Figure 3. Summary of components to the MI approach

1.8 Resistance in MI

MI draws on several psychological approaches to understand and manage resistance. Table 2, overleaf, shows the MI approach to resistance in relation to other psychological approaches previously displayed in Table 1.

In motivational interviewing, the term resistance refers to behaviours that communicate a reluctance or refusal to change (Francis et al., 2005) and can arise from ambivalence (Engel & Arkowitz, 2008). The MI practitioner views resistance as providing meaningful information about the client and their views on change (Harakas, 2013). Whilst this view of resistance is shared by other psychological approaches, resistance is arguably valued, tolerated and viewed less judgementally in MI compared to, for example, organisational or social cognitive perspectives.

Resistance can be communicated non-verbally and verbally, however, speech is more commonly researched within motivational interviewing literature. Hettema, Steele and Miller (2005) provide a simple definition of resistance; "...client speech that defends and expresses commitment to status quo.... it reflects the other side of the client's ambivalence" (p93). Ambivalence may also be described as cognitive dissonance (Festinger, 1962), meaning an uncomfortable state of conflicting motivations. In order to achieve consonance or consistency, an individual may focus on and vocalise reasons not to change to justify their current behaviour. Resistance can therefore involve denial or minimisation of problem behaviour, or an enhancement of its benefits.

Table 2. Comparison of approaches to resistance from different psychological perspectives with MI.

(Importance of item: ◇ = weak, ◇◇ = moderate, ◇◇◇ = strong)

Views on Resistance	Psychoanalytic / Psychodynamic	Behavioural	Cognitive	Social & Social Cognitive	Organizational	Systemic	Gestalt	Existential / Humanist	Relational	MI
Normal (do not judge negatively)	◇	◇	◇	◇◇	◇	◇◇	◇◇◇	◇◇◇	◇◇◇	◇◇◇
Indicator of poor alliance	◇◇◇	◇◇	◇◇	◇◇◇	◇	◇◇	◇◇	◇◇◇	◇◇	◇◇
Internal to client	◇◇	◇	◇◇	◇	◇◇	◇	◇◇	◇◇	◇	◇
Environment & Therapist = important	◇◇	◇◇◇	◇◇	◇◇◇	◇◇◇	◇◇◇	◇◇	◇◇◇	◇◇◇	◇◇◇
Protection from threatening change	◇◇◇	◇◇	◇◇◇	◇	◇◇◇	◇◇◇	◇◇◇	◇	◇	◇◇

Need to maintain status quo	◇	◇	◇	◇◇	◇◇◇	◇◇◇	◇	◇	◇	◇
Different agenda to therapist	◇◇◇	◇◇	◇◇◇	◇◇	◇◇	◇◇	◇◇	◇◇	◇◇	◇◇
Response to restricted freedom	◇	◇◇	◇◇	◇◇◇	◇◇◇	◇◇◇	◇◇	◇◇	◇◇	◇◇◇
Reduces / delays positive change	◇◇◇	◇◇◇	◇◇◇	◇◇◇	◇◇◇	◇◇◇	◇◇◇	◇◇◇	◇◇◇	◇◇◇
Work with (not against) resistance	◇◇	◇	◇◇	◇	◇	◇◇	◇◇◇	◇◇	◇◇	◇◇◇
Resistance can be overcome	◇◇	◇◇◇	◇◇	◇	◇	◇◇	◇◇	◇	◇◇	◇◇◇

The MI perspective emphasises that resistance is the product of an interaction between two people. Rollnick and Miller (1995) define resistance not as a client's internalised attribution, but as a behaviour signalling that the therapist is; "...assuming greater readiness to change than is the case, and it is a cue that the therapist needs to modify motivational strategies" (p327). This view of resistance is discussed in more detail by Moyers and Rollnick (2002). They expect resistance to exist if there is a discrepancy between the therapist or the client's environment and client's agenda, for example if a client is ambivalent and their therapist is invested in the client's change process. The authors explain that an appropriate level of investment from the therapist is necessary, balanced with a respect for the client's autonomy.

This motivational interviewing perspective of resistance being a product of interactions with discrepant agendas was developed from work by Brehm and Brehm (1981), who describe resistance as an individual's reactance to their perceived lack of choice or freedom. The more the client feels coerced or pressured into something, the less motivated and more resistant they will be. The MI therapist therefore has a responsibility to reduce the opportunity for reactance by promoting autonomy.

The above definition of resistance in MI incorporates three main elements:

- 1) the therapeutic relationship,
- 2) the client's ambivalence about change, and
- 3) the client's verbal expression of ambivalence or reluctance to change.

These three elements are treated separately to accurately measure resistance and utilize MI principles and techniques to minimise it. The first two elements of resistance will be briefly discussed, followed by a more specific focus on the client's verbal expression of resistance to change, the focus of this investigation.

1.8.1 Discord in the therapeutic relationship

Discord relates to interpersonal reactance in the therapeutic alliance. Miller and Rollnick (2013, p204) describe discord as “signals of disharmony” in the relationship and although the client and therapist are equally responsible for this, the therapist must pay heed and adapt their behaviour to minimise this where possible. Discord is only one form of resistance and can negatively affect the success of any MI treatment (Miller et al., 1993; Patterson & Chamberlain, 1994; Safran et al., 1990).

1.8.2 Ambivalence in MI

Ambivalence involves “simultaneous conflicting motivations” or thoughts about a matter (Miller & Rollnick, 2013, p157), leading to an uncomfortable emotional state. Many of the psychological approaches to resistance suggest that an individual will naturally move towards a state of resolution or consonance, given the opportunity (Engle & Arkowitz, 2008; Festinger, 1962). Although it can be resolved, an individual may also remain in a state of ambivalence for many years if they avoid thinking about the conflicting views. Avoidance of ambivalence is also regarded as resistance, since avoidance, by default, leads to maintaining the status quo and impeding the change process.

Ambivalence is both normalised and viewed positively within the field of MI. It indicates that an individual is contemplating change and has therefore progressed from the ‘precontemplation’ (avoidant) stage (Prochaska & Velicer, 1997). The MI approach uses a unique style and technique to move the client towards resolving their ambivalence (Miller & Rollnick, 2013). Ambivalence is a key feature of addictive behaviours (Engle & Arkowitz, 2006) because they can be highly rewarding for the individual and highly destructive to their physical health and relationships. Therefore, ambivalence (and avoidance of ambivalence) can lead to serious long-term consequences (Department of Health, 2008; Room, Babor &

Rehm, 2005). As previously mentioned, MI was originally developed to address alcohol addiction, but before addressing how an MI therapist might support an individual to manage their addictive behaviour, an understanding of addiction is necessary.

1.9 Understanding Addiction

Theoretically, addictive behaviour can be viewed as irrational, as an individual's knowledge of its damaging effects may not prevent them from habitually engaging in the behaviour (Ainslie, 1992 cited in Rachlin, 2007). However, Becker and Murphy (1988) and Gruber and Koszegi (2000) describe some behaviours such as smoking and drinking as rational, because the gains of the addictive behaviour can outweigh the associated future costs. According to Breiner, Stritzke and Lang (1999), seemingly opposing thoughts and behaviour may exist in parallel and alter over time in any individual. Dual processing theory (Evans 2008; Schneider & Shiffrin, 1977; Shiffrin & Schneider, 1977; Schneider & Shiffrin, 1984) could explain this, as it proposes that there are implicit (automatic) and explicit (controlled) cognitions and emotions that are independent, allowing for the co-existence of conflicting motivations. Breiner, Stritzke, and Lang (1999) also proposed that the opposing 'approach' and 'avoidance' (abstinence) inclinations for drinking operate as independent motivations; whichever is stronger, leads to the behaviour.

In the field of addiction, dual processing theory has been supported by empirical research by Wiers and de Jong (2006). They reviewed a range of cognitive research, including self-report and implicit association tests on addictive behaviours, primarily regarding drinking and smoking tobacco. Their summary suggests that heavy drinkers hold both positive and negative (implicit and explicit) associations with alcohol. Implicit associations are affective experiences involving amygdala activation and explicit associations are cognitive experiences involving the neocortex (Wiers and de Jong, 2006). However, the pleasurable psychopharmacological effects of drinking become embedded memories. Rudman (2004)

stated that these memories explain how the more automatic pleasure-seeking motivation outweighs even strong negative explicit associations of drinking.

More recently, Dickson, Gately, and Field (2013) investigated implicit and explicit associations comparing heavy, dependent drinkers and moderate, social drinkers. They found that only implicit associations predicted group membership. Dependent drinkers had both strong-positive and strong-negative self-reported cognitions (explicit associations) exemplifying ambivalence, but strong-positive and weak-negative implicit associations. The authors concluded that this pattern of implicit associations maintains the status quo of problem drinking behaviour as the strong-positive, implicit associations are highly rewarding, therefore incentivising drinking regardless of strong-negative thoughts about the behaviour.

This research corroborates the SDT and the MI perspective of addiction counselling; people behave in a way they find implicitly rewarding. It supports the theory that applying ‘extrinsic’ (explicit) pressure on an individual is futile when implicit (intrinsic) motivations determine behaviour. A superior approach would be for the client to integrate explicit, negative cognitions and experience these as implicitly negative. Theoretically, the MI therapist’s task is to compassionately facilitate this integration process. Since MI was first developed, various investigations have been carried out to evaluate the effectiveness of this approach for changing addictive behaviour.

1.9.1 MI and addiction: the evidence

There is a growing and reputable evidence base for motivational interviewing. Meta-analyses by Burke, Arkowitz and Menchola (2003) and Hettema, Steele and Miller (2005) found MI to be an efficacious (although variable) treatment for a range of substance use problems. Meta-analyses by Ballesteros (2004) and Vasilaki, Hosier and Cox (2006) found MI to be effective for alcohol abuse specifically. The majority of the studies included in these meta-analyses did not compare MI to another talking therapy, yet the absence of an

alternative treatment is externally valid, since a common and viable alternative for problem drinking would be clinic-based support (information and medication) or, less frequently, social behavioural interventions (Bien, Miller, Tonnigan, 1993).

Although RCTs can give a general picture of whether a treatment is more or less effective, they cannot always answer the question of how or why a therapy may appear to work (Cartwright, 2007). Process research using therapy sessions recorded in these trials is necessary to investigate how and why therapy works, as process enables a close inspection of how the client and therapist interact, essentially “what is going on in therapy” (Greenberg, 1986, p4). More recently research has started to investigate the active ingredients of MI, e.g. whether unique aspects of MI are behind its apparent effectiveness for treating alcohol dependency, and how barriers to change are managed in reality (Daeppen, Bertholet & Gaume, 2010; Lee et al., 2010; Moyers, Martin, Houck, Christopher & Tonigan, 2009).

Before reviewing process research in MI, an introduction to the terminology is necessary.

1.10 Resistance talk

Miller and Rollnick (2013) describe the verbal expression of client resistance to change or opinions which endorse maintaining the status quo, as “sustain talk” (p7). It is referred to in empirical literature as both sustain talk and “counter-change talk” (Moyers et al., 2009, p2). It will be described in this report as counter-change talk (CCT).

Commitment and an absence of commitment are central to MI. Amrhein et al. (2003) proposed that client motivation is reflected by the strength of commitment in their speech, referred to as “change talk” (CT) by Miller & Rollnick (2013, p7) . He reported commitment to be comprised of four components that determine its strength: desire, ability, reasons and need (DARN). Desire is indicated by words such as ‘want’, ‘hope’, ‘wish’; ability is indicated by ‘could’, ‘would’ and ‘am able to’; reasons involves statements that support or

undermine commitment to change; and need statements indicate importance or urgency such as, “I’ve got to”. A balance of all four (indicating readiness) is necessary for successful change to take place. Amrhein et al. used DARN components to describe change talk. He viewed counter-change talk as on the same continuum therefore the same components (desire, ability, reasons, need) can be applied with a negative value.

Counter-change talk is helpful for the MI therapist as it can provide context and key information about the client’s ambivalence since it contains aspects of client’s thoughts and behaviour that work against their commitment. Change talk is often embedded within counter-change talk revealing ambivalence, e.g. CCT-CT-CCT. Moyers et al. (2009) called this a “change talk sandwich” (p12). The context of counter-change talk allows opportunity for eliciting motivation and change-talk in clients Moyers and Rollnick (2002).

Both change talk and counter-change talk is client’s speech that directly relates to a target behaviour (Martin et al., 2005; Moyers et al., 2009) therefore counter-change talk is recognisable after the focus of therapy has been established. It does not include speech relating to the therapeutic alliance although discord may affect the potency of the counter-change talk. Examples of counter-change talk, listed in increasing strength, are: “I know that I drink too much but I’m not ready to do anything about it just yet”, or “I don’t think my alcohol intake is that serious” or “I’m never going to give up”.

1.10.1 Counter-change talk: One type of resistance

Counter-change talk is only one specific aspect of resistance (see figure 4). Resistance may also be expressed non-verbally (Bylund & Makoul, 2005) or not overtly expressed at all but inwardly thought. Resistance can manifest in the client’s behaviour in opposition to their own speech, for example, when a person talks about stopping drinking but does not do so.

The definition of resistance in this thesis and the interpretation of language is also influenced by behaviourist principles. The behavioural influence is manifest in the measurement of overt behaviour. In this investigation, only verbal behaviour is measured with the interpretation being weighted on explicit content of speech because speech is a specific, measurable in-session behaviour, illustrated in figure 4 below.

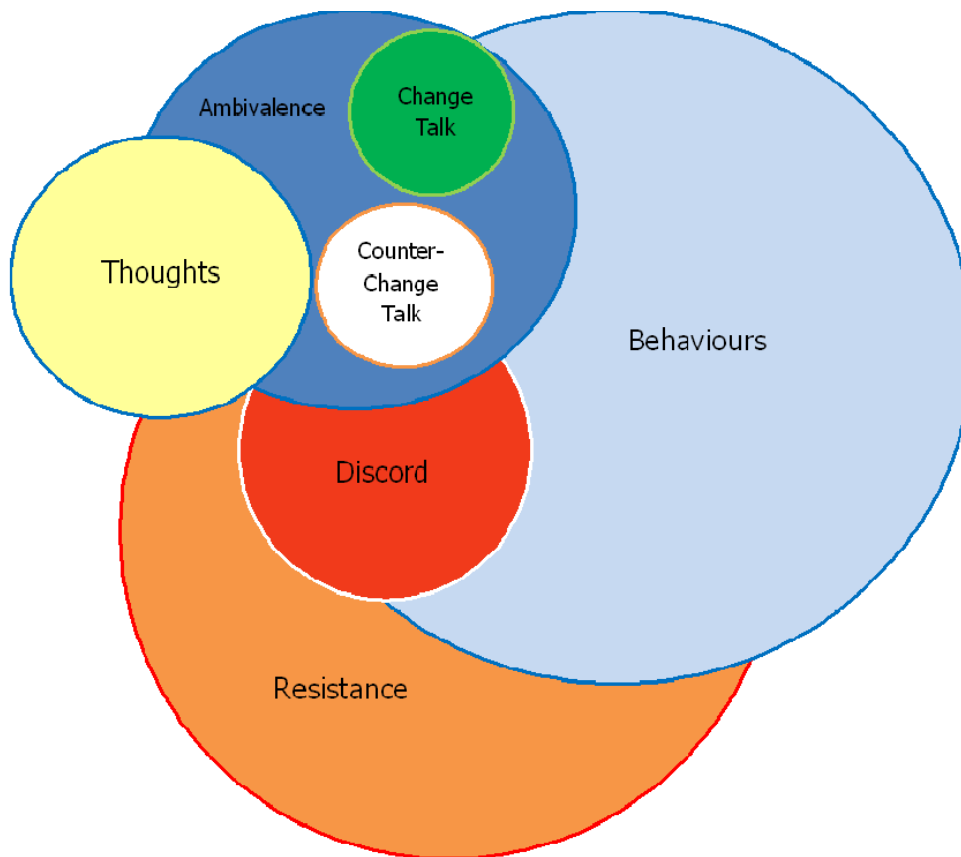


Figure 4. Counter-change talk in the context of multiple aspects of resistance in the MI approach

1.10.2 Identifying and measuring CCT

In-session measures involve rating and coding client and therapists' verbal behaviour from recordings and transcripts. The Motivational Interviewing Treatment Integrity (MITI) was developed by Moyers, Martin, Manuel, Miller, and Ernst. (2010) to focus on therapist behaviours and assess treatment adherence and clinical competence. For process research of

both client and therapist speech there are the Motivational Interviewing Skills Code (MISC; Miller, 2000) and the MI-SCOPE (Motivational Interviewing Sequential Code for observing process) (Martin et al., 2005).

The MISC has a global-measure scale which captures the observer's general impressions of the session (measured on a 7-point likert scale). It also facilitates frequency analysis of certain behaviours codes. Behaviour codes are a means of classifying behaviour in a standardised fashion. Applying behaviour codes to interactions generates nominal data about therapeutic interactions. The MISC can be used for training purposes by examining the therapist's use of MI linguistic techniques. The nominal data can be converted to quantitative data for predictive analysis. Using standardised measures of behaviour such as the MITI, MISC and MI-SCOPE can generate information about MI mechanisms that affect change (Moyers et al., 2005). The MI-SCOPE is discussed below.

Utterance frequencies alone cannot capture the complexity of human interactions. Amrhein (1992) was the first to rate the strength of commitment, which he and Hodgins, Ching, & McEwen (2009) found to be the biggest predictor of behaviour change, independent of CT frequency. This suggests that it is important to continue to detail what, when and how statements are spoken in an MI session. The meaning of any speech behaviour is best understood within the context of the conversation, therefore it is reasonable for the interaction between two people to be analysed as part of a sequence of speech behaviours. Such analysis is achieved through the development of more sensitive standardised tools. Martin et al. (2005) addressed this need by developing The MI-SCOPE (Sequential Code for Observing Process Exchanges). The MI-SCOPE incorporated strengths from the MISC and Amrhein's coding strategy to develop a more complex coding manual for sequential analysis. The MI-SCOPE includes valence ratings, i.e., positive or negative values for behaviours. These aid the categorisation of behaviours into change talk, counter-change talk and other behaviour types.

Behaviour codes and categorisations are described in more detail in 2.7.3. The MI-SCOPE does not include strength ratings of CT and CCT because strength of a statement is difficult to reliably rate (Martin & Moyers, 2006). The rationale is explained in section 1.12.

1.10.3 Resistance as a problem in MI

MI was developed to address peoples' compulsion to engage in addictive behaviours, in particular drinking alcohol (Miller, 1983). Client resistance is an important focus for MI therapy as it works against client commitment to change (Miller et al., 1993; Miller & Rollnick, 1991). High resistance, including the frequency and strength of client's counter-change talk, predicts poor change outcomes in illicit drug use (Amrhein, Miller, Yahne, Palmer, & Fulcher, 2003) in smoking, (Francis et al., 2005) and in drinking alcohol (Miller & Rollnick, 1991). However, empathic speech has been shown to hold a positive association with change talk, mediated by therapist reflections of change talk (Fischer & Moyers, 2014).

Confrontation is particularly important as this can compound the client's resistance, creating reactance and pushing them further towards the unhealthy behaviour (Miller, 2006). This potentially has negative long-term effects on the clients' health, well-being and relationships, and potentially expense and increased waiting lists for healthcare providers (Department of Health, 2008). Confrontation or interpersonal resistance damages the therapeutic alliance and may lead to complete disengagement (Linehan, 1993; Miller et al., 1993; Patterson & Chamberlain, 1994; Safran et al., 1990). Yet sometimes therapist reactance and a directive position can be beneficial for client outcome (Arnow et al., 2003). The likelihood of therapist reactance being beneficial has been found to be dependent on the reason for seeking psychological therapy and no benefit has been found for clients seeking help with substance misuse (Polcin, 2006).

The above evidence supports the case that therapist behaviours affect their clients. With any talking therapy, language is a pertinent focus of investigation and research in MI

has sought to understand how and to what extent therapists' language can affect client's problem behaviour.

1.10.4 The influence of therapists' speech

According to Christopher & Dougher (2009) language should be used as a sensitive tool to facilitate a safe environment where the client can "contact psychologically painful verbal accounts of behaviour without attempting to escape or avoid them" (p158).

Researchers in the field of MI have found that therapist speech significantly influences client resistance and speech. Research by Moyers et al. (2009) reveals that when therapists reflect commitment language or 'change talk', clients are more likely to expand on this change talk; the same is true for 'counter-change talk'.

Therapeutic interactions are two-way. A therapist can elicit behaviour in a client and client speech determines therapist speech to some extent (Barnett et al., 2014). Client confrontation or counter-change talk can elicit therapist behaviours inconsistent with the motivational interviewing spirit or model such as: confrontation, warning, asking closed questions, and offering advice without permission (Daeppen, Bertholet, & Gaume, 2010; Francis et al., 2005; Miller, 2006; Moyers & Stephen Rollnick, 2002). This enhances discord (Miller & Rollnick, 2013) or confrontation in the therapist further increases client resistant behaviour (Miller, 2006). Therapist confrontation predicts poorer outcome in client behaviour change (Miller et al., 1993). It is therefore crucial that therapists manage to overcome resistance and counter-resistance with MI consistent behaviours.

1.10.5 Rolling with resistance

One of the ways an MI therapist should respond to discord or counter-change talk is for the therapist to 'roll with resistance'. This involves meeting the client's speech with reflection not confrontation (Moyers & Rollnick, 2002). Instead of "paddling upstream"

against the client's motivations, therapists should follow the client's "current" and use the energy to "steer the interaction" (p187). Strategic behaviours such as emphasizing autonomy and using complex reflections, (e.g.: "double-sided" reflections or "agreement with a twist") (Miller & Rollnick, 2013, p202) can be used to indirectly address resistance (see figure 1 and table 2 for more examples). The MI therapist would not overtly discourage the client from speaking about their ambivalence; instead, they search for change talk within the counter-change talk and reflect this. Miller and Rollnick (2013) describe it as a, "lighthouse in the storm"; although CCT may be fluent, "...it is not necessary to eliminate the storm...just follow the signal" (p178).

Theoretically, this is a sensible approach to managing resistance as it relieves external pressure from the client that would otherwise lead to reactance. Evidence supports rolling with resistance but it is unclear as to how rolling with resistance is operationalised linguistically. It is also unclear what evidence exists for the effectiveness of this technique in clinical research and practice. Recent publications comparing different models of psychological therapy for addiction have revealed either no significant differences between treatments for some forms of addiction, or small effect sizes (Burke, Arkowitz & Mechola, 2003; Group MATCH Project research, 1998; UKATT Research Team, 2005). This raises the question of what elements of MI are effective and if and how this question be answered (Miller & Moyers, 2015; Wampold, 2005). Process research has begun to address this gap in evidence through examining the technicalities of therapist and client language interactions.

1.10.6 Client speech and its influence on attitude and behaviour

Miller and Rollnick (2002) state that clients infer their motivation from their own speech as Bem (1967) suggested. This could indicate that client speech in therapy sessions is more predictive of behaviour outcomes than therapist speech. The less counter-change talk and the more change talk the client hear themselves say the better their outcomes will be.

This is supported by a meta-analysis of twenty-six MI for substance use studies (Apodaca & Longabaugh, 2009) and other independent process research (Glynn & Moyers, 2010; Miller & Rose, 2009; Vader et al., 2010). Miller and Rollnick (2002) cite change-talk as a potential mechanism that promotes action. Miller and Rose (2009) and Moyers et al. (2007) found change talk mediates the relationship between MI-consistent clinician behaviours and improved client drinking outcomes. A meta-analysis by Magill et al. (2010) did not support these findings. Magill et al.'s results showed that MI-consistent therapist language correlated with client change talk but not client drinking behaviour change. MI-inconsistent language correlated with more counter-change talk and less change talk, but only counter-change talk was associated with poor drinking outcomes. The discrepancy in findings may be due to the different statistical analyses used, but it also highlights the need for more research in this area.

There is also some neurological evidence to support the need to minimise counter-change talk. In-session speech can evoke strong emotions and implicit associations. One neuroimaging study found that spontaneous sustain talk about drinking activated several dopaminergic (reward) pathways in heavy drinkers when change talk did not (Feldstein Ewing et al., 2011). If individuals experience an appetitive response to the words they hear themselves speak this may enhance their implicit motivation to continue this behaviour. This recent research is the first of its kind, using controlled experimental conditions. It positively contributes to evidence indicating the importance of client speech and strengthens the rationale for the therapists to minimise the frequency of sustain talk within therapy sessions. It is therefore appropriate to continue research investigating specific therapist and client behaviours, that may or may not explain the effectiveness of MI at reducing sustain talk.

1.11 In-session speech analysis

Investigations into sequential analysis of within-session client and therapist language began less than ten years ago with the aim to find a causal relationship between speech and

behaviour (Gaume et al., 2008; Moyers et al., 2007; Moyers et al., 2009). Using a mediation analysis, Moyers et al. (2009) found a causal chain of associations between both client and therapist speech and client drinking behaviour five weeks later. Several authors have found that therapist behaviours were predictive of client speech and client behaviour (Daepfen, Bertholet and Gaume, 2010; Gaume et al., 2008; Glynn & Moyers, 2010; Magill et al., 2010; Moyers et al., 2009). Some research has found predictive relationships between the client's speech and their target behaviour (Amrhein et al., 2003; Gaume et al., 2008; Moyers et al., 2007; 2009). Some investigators have identified that client behaviour can influence subsequent therapist behaviour. Francis et al. (2005) found that high resistance in clients increased therapist confrontation. Gaume et al. (2008) found that client speech about target behaviours was more likely to be followed by MI-consistent behaviours from the therapist. Barnett et al. (2014) evidenced found that client change talk predicted positive therapist reflections and client counter-change talk predicted negative reflections.

These findings have begun to lay a foundation of evidence for the importance of client and therapist speech interactions on the client's verbalisations about commitment to change. All the above research involved participants who were seeking help to reduce their alcohol consumption and, with the exception of Barnett et al., (2014), all focussed on commitment.

The results supporting the predictive relationships between therapist and client in-session behaviours does not rule out the possibility that something other than speech may be responsible for the speech outcomes. Apodaca et al. (2013) found that the significant other's support and reinforcement style towards the client six months prior to therapy was the best predictor of change talk. Such process research evidence highlights the distinction between global-relational behaviours and specific technical behaviours. In-session speech from time-limited therapy is only a small part of a much bigger picture of an individual's life, where life events and long-term relationships can hold a powerful influence on behaviour. The findings

from this study and other in-session process research should be considered within this broader context.

Measuring language could be considered a more objective method of in-session behaviour analysis than measuring non-verbal behaviour because "...verbal cues are definable by explicit dictionary of rules and syntax..." (Mehrabian, 1997, p2). Language captures verbal and vocal information, including content, tone and volume. Tone and volume (vocal information) can assist the listener in understanding the meaning of the statement (Foley & Gentile, 2010). Conversely, tone and volume may increase ambiguity. For instance, a therapist's positive, simple reflection accompanied by a sarcastic tone of voice could be perceived as confrontation. It is, therefore, important to include vocal information when analysing speech behaviour. Unfortunately, analysis of language in isolation excludes non-verbal communication, which strongly influences the verbal message and the therapeutic relationship, (Foley & Gentile, 2010; Haase & Tepper, 1972; Hill, Siegelman, Gronsky, Sturniolo, & Fretz, 1981) non-verbal observations are more likely to lead to unreliable, subjective interpretations, meaning that standardised measures of non-verbal behaviour are rare. Difficulty in detecting unspoken behaviours and operationalizing non-verbal cues in a reliable and standardized fashion may lead to inaccurately attributing outcomes to speech behaviours because they are more palpable. One resolution would be to analyse both verbal and non-verbal behaviour simultaneously, but this would also involve using two different coding frameworks, and merging these could create additional analysis problems.

The strength of change and counter-change talk, or the level of conviction an individual speaks about an issue may be a good indicator of their attitude and likelihood to change their behaviour. The psycholinguist Amrhein endorses the use of strength ratings to classify change and counter-change talk for this reason and has evidenced this theory (Amrhein, 1992; 2004; Amrhein et al., 2003). Amrhein et al., (2003) found that the strength of participants'

commitment to change in videotaped interviews, predicted their behaviour outcomes (proportion of days abstinent from drug use). Strength ratings have, so far, not been used in sequential analysis studies for either change or counter-change talk, and they were not used in this research either. There are three main reasons for this:

- 1) The strength of counter-change talk was not directly relevant to the research aims, which directed the investigation to the presence or absence of counter-change talk.
- 2) This investigation used the MI-SCOPE which does not use strength ratings, and
- 3) Amrhein et al. (2003) does not explain how the ratings of strength are decided upon, making rater agreement difficult to achieve.

The first reason requires little discussion other than the acknowledgement that under different circumstances strength ratings could be relevant. The second and third reason are less clear but may be connected. The MI-SCOPE authors (Martin et al., 2005) do not support the theory that counter-change talk is the opposite of change talk, as Amrhein (2003) implied. When counter-change talk is present alongside change talk, these conflicting motivations may not necessarily neutralise one another. If a researcher codes the strength of change talk as very strong and counter-change talk as moderate, it may lead to them to make incorrect (although logical) assumptions about the client's commitment. This is likely considering the transitory and complex nature of ambivalence.

1.12 Rationale for in-session sequential speech analysis

A focus on researching in-session sequential speech patterns has several strengths. Sequential client-therapist interaction is an important area of research as it can uncover if client resistance is diffused, enhanced or neither. It can involve global observations of the frequency and strength of in-session behaviours (Amrhein et al., 2003; Francis et al., 2005; Glynn & Moyers, 2010; Tober et al., 2008). The analysis of the sequence of in-session speech

can focus on the interactive, conversational process that unfolds. It can capture snapshots of the direction and momentum of the conversation and the emotion and motivation of the client and therapist. It may also provide insight into what led to an individual saying what they did. Some published evidence suggests that both the client and the therapist influence each other in session (Barnett et al., 2014; Gaume et al., 2008; Glynn & Moyers, 2010; Magill, et al., 2010; Moyers et al., 2009). Sequential interaction is therefore an important process to consider when addressing resistance, since resistance is at least partly due to interactions between both parties. Moreover, sequential analysis of speech provides evidence about whether and to what extent MI is being practised as intended; the integrity of the MI treatment model.

The following sections will explain why process research is appropriate in this instance.

1.13 Focus of thesis research

The current thesis investigated how the therapist responds to client counter-change talk about drinking and how the client responds to the therapist. My recent systematic search on client and therapist language in MI sessions revealed twelve studies investigating in-session language in relation to client drinking behaviour outcomes (Apodaca et al., 2013; Baer et al., 2008; D'Amico et al., 2015; Daeppen et al., 2010; Ewing, 2014; Houk, 2012; Klonek, Lehmann-Willenbrock & Kauffeld, 2014; Magill et al., 2014; Martin, Houk & Moyers, 2011; Moyers, 2009; Moyers et al., 2007; Ossila et al., 2015; Vader et al., 2010) and, that overall, more research has been carried out focusing on client change talk (Amrhein et al., 2003; Apodaca et al, 2013; Baer et al. 2008; Bertholet et al, 2014; Gaume et al., 2008; Glynn & Moyers, 2010; Fischer & Moyers, 2014; Hallgren & Moyers, 2011; Magill, 2010).

A more specific, systematic literature search containing the terms: “change-talk” and “sustain-talk”, and “sustain” and “talk”, revealed eleven articles, with four being specifically relevant to client in-session sustain or counter-change talk alongside MI therapist speech, to address in relation to drinking, (Martin & Moyers, 2006;). One of these four (Magill et al., 2014) is a meta-analysis, which highlights how under-researched the subject of in-session resistance is. Aside from Barnett et al. (2014), Daeppen et al. (2010) and Kivlighan, Multon, and Patton (1996) counter-change talk has not been investigated to the same extent as change talk, despite the evidence that counter-change talk is also observed alongside change talk (Moyers, 2009; Vader et al., 2010). The persistent presence of counter-change talk alongside change talk in these studies could suggest that counter-change talk may not be a strong indicator of behaviour change. This is contrary to some evidence showing an association between client counter-change talk and poor behaviour outcomes (Amrhein et al., 2003; Francis et al., 2005; Magill et al., 2014; Miller & Rollnick, 1991; Vader et al. 2010). There is also the possibility that a reduction or absence of counter-change talk may indicate a resolution of ambivalence. For example, weakening positive explicit associations with self-determined, drinking behaviour could indirectly enhance commitment to change. Resolving ambivalence by diffusing resistance in problem drinkers is the basis of the rationale for the current thesis investigation. The investigation focused on specific speech behaviours as indicators of clients’ attitudes and therapists’ skill.

Previous process research has focused on the transitional probabilities of one utterance following another, and on the influence of therapists’ speech on clients’ speech (Brown, 2014; Daeppen, Bertholet & Gaume, 2010; Moyers et al., 2009) with two known exceptions. Gaume et al. (2008) and Barnett et al. (2014) investigated both the therapists’ influence on client speech and the client’s influence on therapists’ speech. Recently published research by Barnett et al. (2014) is particularly relevant to the current thesis

research as these authors added a third utterance to their sequential analysis, enabling an investigation into whether and how client speech changes after a therapist's intervention. Barnett et al. (2014) investigated whether therapists' reflections or reframing responses for all types of client speech significantly influenced the clients' subsequent utterances towards or away from change, or neither. Their findings suggest that both the client and the therapist influence one another, since there were significant conditional probabilities between certain types of client and therapist speech. For example, they found that when the client spoke CCT, the therapist was 19 times more likely to respond by reflecting these negative statements about change and 70% less likely to follow CCT with a positive reflection. However, Barnett et al. also found that when therapists managed to resist negative reflections and instead reframed the client's CCT into a positive reflection, they had a smaller but significantly positive effect on client language. Clients were approximately 4 times more likely to utter change talk after therapists' reflections.

Barnett et al's (2014) research is highly relevant to this thesis because it involves a three-part chain of interactions. However, the research differs in that Barnett et al. focused primarily on the direction of therapists' reflections (whether they reflect change or counter-change talk). The current thesis research instead addresses change in client speech following therapist speech, but narrows the focus to counter-change talk alone. Responding to counter-change talk is an important area to research, since a key reason that MI was developed was to approach resistance to change more effectively than existing treatment approaches (Miller, Benefield & Tonigan, 1993). Investigating whether and how resistance has been diffused, compounded or neither option is central to this investigation, which includes examining client speech immediately before and after therapist behaviour. To facilitate the detection of potential change in client resistance behaviour, two instances of client speech behaviour is required, forming a three-part sequential behaviour chain (client-therapist-client). The current

investigation advances previous sequential analysis by extending the sequence of behaviours to three parts, which requires the analysis of more verbal information, and incorporates more contextual information. The examination of therapist behaviours allows close and feasible analysis of therapists' adherence to MI, which may or may not influence, or be influenced by, the client's counter-change talk.

1.14 Aims

This research question aimed to discover whether, and to what extent, MI-specific therapist strategies affect immediate client resistance about behaviour change (counter-change talk or CCT). This aim can be expressed with the question: How does a therapist respond to resistance and what impact does this have on the client?

The research focused on a three-part interaction illustrated in figure 5 below:

- i) client language that includes CCT,
- ii) the therapist's response to this resistance, and
- iii) the client's subsequent speech.



Figure 5. The utterance chain: the section of in-session speech to be analysed.

In this study the absence of further counter-change talk (CCT) following the first instance of client resistance, will be an indicator of a successful or a sufficient response to CCT. This is supported by Moyers and Martin (2006).

1.14.1 Primary aim: investigating the therapist's effect

This research investigated the transition between the therapist and client utterances (2 and 3) to determine what the client verbalises following the therapist's intervention.

The outcome was measured by four possible categories:

1. CCT: the absence of CT with or without neutral speech
2. Other: the absence of CT or CCT
3. Ambivalence: the presence of both CT and CCT with or without neutral speech
4. CT: the absence of CCT, with or without the presence of neutral speech

The inclusion of the ambivalence category is to capture the common behaviour of clients verbalising both CT and CCT alongside one another. The initial client utterances (baseline CTT) may also include CT or other speech, therefore an outcome of ambivalence would not necessarily indicate the therapist intervention has successfully diffused resistance.

1.14.2 Secondary aim: a possible client effect

The research will investigate how frequently therapists respond to client counter-change talk in a manner consistent with the MI approach.

1.15 Justification of hypotheses: a summary from the evidence base

Theoretical MI literature on resistance discusses resistance (at least partly) as an interaction effect between the client and therapist (Miller et al., 1993; Miller & Rose, 2009; Patterson & Forgatch, 1985). Empirical research within the MI literature supports the importance of sequential behaviours in that a therapist can influence what the client says next and vice versa (Barnett et al., 2014; Daepfen et al., 2010; Bertholet and Gaume, 2010; Francis et al., 2005; Gaume et al., 2008; Glynn & Moyers, 2010; Magill et al., 2010; Moyers et al., 2009). It is, therefore, expected that therapist behaviour will have an impact on subsequent client behaviour.

Daepfen et al. (2010) showed that MI-inconsistent (MIIN) therapist utterances are likely to elicit counter-change talk (CCT) behaviour. Barnett et al. (2014) demonstrated that

negative reflections alone elicit CCT. Both authors evidence the psychological reactance theory (Brehm, 1966).

Previous research focusing on change talk resulted in Glynn and Moyers (2010) concluding that MICO behaviours were most likely to elicit change talk (CT). Barnett et al (2014) demonstrated that specific forms of MICO behaviours (e.g. positive reflections) reduce the likelihood of CCT. Gaume et al. (2008) went further, stating that MICO behaviours are the only behaviours to do so.

Moyers et al. (2009) found that therapists should expect to hear more of what they reflect, and reflection is the strongest predictor of client speech behaviour. Barnett et al. (2014) did not report how therapists' neutral responses related to clients' subsequent utterances, however they found that therapists were seven times more likely to respond to clients' neutral language with language that did not include positive or negative reflections.

1.15.1 Null hypothesis

The therapists' responses will make no difference to the presence of CCT in the following client utterance.

1.15.2 Alternative hypothesis 1

The therapists' response to hearing CCT will affect the second client utterance in that:

- a) An MI-inconsistent (MIIN) therapist response is more likely than by chance to be followed by CCT or ambivalence.
- b) An MI-consistent therapist (MICO) response is more likely than by chance to be followed by CT, ambivalence or neutral client speech, than CCT.
- c) 'Other' therapist responses are more likely than by chance to be followed by neutral client speech.

1.15.3 Alternative hypothesis 2

Therapists will be more likely generate ‘other’ speech (neither MIIN nor MICO behaviour) or MI-consistent (MICO) behaviour than MI-inconsistent (MIIN) behaviour.

The hypotheses are summarised in figure 6 below.

Client Utterances	Therapist Response →	Client Utterances
(baseline)		
	MI-consistent (MICO)	<ul style="list-style-type: none"> • Change Talk (CT), • Ambivalence (AMBIV) or • Client Other (CLOther)
Speech including counter-change Talk (CCT)	*MI-inconsistent (MIIN)	<ul style="list-style-type: none"> • Counter-change (CCT) or • Ambivalence
	TOther (O)	<ul style="list-style-type: none"> • Client Neutral

* = least likely to be spoken overall

Figure 6. Alternative hypotheses

2. Method

2.1 Design

This process research examined the conversational content of a therapeutic approach to understand how change occurs (Greenberg, 1986). It involved secondary analysis of existing data, using a cross-sectional design, where qualitative, audio information (therapeutic discourse) was converted into nominal then numerical data for quantitative analysis.

2.2 Participants

This research used recorded therapy sessions of trial therapists and participants in UKATT (UKATT Team, 2005). The participants in this thesis research were a subsample of participants allocated to complete three sessions of Motivational Enhancement Therapy (MET). MET is a manualised motivational interviewing based treatment, adapted for the UKATT trial (Tober et al., 2002). Participants were over sixteen years old, had alcohol abuse as their main problem and would normally receive support from a UK treatment site.

Written consent was gained from each participant in UKATT for storage of anonymized data and video recordings of therapy sessions to be used in future research. (See appendix A for a copy of the consent form). The same client identifying code allocated to participants in UKATT was used in this research. Recorded participants were anonymous to the researcher. The clients were audible from the video but only the therapists were visually recorded. In this thesis research video recordings were played back through a software package, which transmits audio information only.

2.3 Ethical approval

This study gained National Research Ethics Committee ethical approval under proportionate review from the Black Country NRES committee on 27th February 2014 (REC reference: 14/WM/0075). This study gained NHS R&D approval from LYPFT (Leeds and York Partnership Foundation Trust) approval on 3rd March 2014 (reference: 2014/478/L).

2.4 Content of recordings: Motivational Enhancement Therapy (MET)

The UKATT manualised MET included three sessions. The first was structured around personal feedback from pre-treatment client self-report questionnaires and liver function tests. This was followed by open discussion about the benefits of and problems with their drinking behaviour, with the aim of eliciting client concerns and self-motivational statements. The second session occurred one week after the first and began with a brief summary of the first session, followed by establishing goals and identifying barriers to goals. The third session occurred approximately six weeks after the second and specific instances of resisting drinking or problem drinking behaviours were reviewed. The final session included an overall summary of the client's progress with the aim of eliciting optimism in the longer-term. The final session specifically addressed special problems, and exploring additional areas for change. All sessions involved the therapist applying MI principles and strategies to enhance motivation and maintain positive change, and ended with the therapist summarising the discussion.

2.5 Sampling

MI therapy recordings from the UKATT (UK Alcohol Treatment Trial) (UKATT Team, 2005) were selected using a combination of random and purposeful sampling. A random number table was used to obtain a three-digit number to select the corresponding disk number of a recording. If the random number corresponded with a recording that was not an

MET session, an MET recording with the closest disk number to the random number was selected. Next the MET recording was screened to ensure:

1. acceptable sound quality,
2. it contains CCT,
3. two recordings from the same client had not already been selected.

If these criteria were not satisfied, a new random number was obtained and used to select a different recording using the same process. The recordings included in the data collection were compiled in a database and organised according to participant ID and session number. From the data pool of MET recordings there were approximately 250 recordings using 28 therapists and approximately 80 clients. Throughout the sampling process 90 recordings were screened and 40 recordings were excluded after screening. This left 50 MET recordings for data analysis.

In the majority of cases only one recording was used per client ($n=41$, 82%) to gain data from a range of individuals. The majority of therapists ($n=26$, 93%) were present in the sample on two recordings or less. Two therapists were used more than twice (one therapist was present in the data on five recordings and another therapist was present on four recordings). Considering the therapist to client ratio, this was inevitable. In UKATT the MET intervention was delivered over three sessions, all three sessions were represented in the sample of recordings: 18 MET session 1 recordings, 19 MET session 2, and 13 MET session 3 recordings were used in this data.

2.6 Power

Power calculations were run to ensure sufficient data was collected to detect if predicted relationships existed. To compute reliable probability ratings (Martin et al., 2005) advise that 3 utterances are used as the minimum 'cell frequency' in a probability matrix. Martin et al's calculations were replicated and extended to include the process of collapsing

codes into categories. In this investigation there were 45 codes, 28 of which are therapist and 17 of which client codes. This means that there are 476 possible combinations of therapist-client code pairs (28x17). To ensure there are at least 3 behaviour codes in each cell, there should be at least 1428 behaviour codes (476 x 3). All codes are categorised into 7 categories (4 client and 3 therapist) meaning that the cell frequency of the matrix increases (1428/7=204). Therefore, for the minimum cell frequency to be satisfied the data collection needed to include at least 204 transitions between therapist and client codes. Minimum cell frequencies are illustrated in table 3 below.

Table 3. Hypothetical probability matrix for power calculations

		Client Categories			
		CCT	AMBIV	CLOther	CT
Therapist Categories	MICO	>3	>3	>3	>3
	MIIN	>3	>3	>3	>3
	TOther	>3	>3	>3	>3

1.7 Data collection

2.7.1 Procedure

This research involved converting qualitative data into a standardised numerical value for quantitative analysis. Once a video recording was selected it was converted into file enabling the recording to be played in ‘CACTI’ (CASAA Application for Coding Treatment Interactions; Glynn et al., 2012). CACTI is a free software package that enables live coding of client and therapist speech without transcription (Glynn et al., 2012). Once uploaded to ‘CACTI’ the video-recording was played back without visual information. This process is beneficial in that it reduces the labour intensive process of transcribing recordings, yet allows

the recording to be played back multiple times if necessary. The conversation was then deconstructed, firstly by identifying and demarcating sections of the recording where CCT was spoken, then by separating speech into individual utterances within this section to create the utterance chains. An ‘utterance’ is defined as “a complete thought or thought unit” (Gottman, Markman & Motarius, 1977; Weiss, Hops & Patterson, 1973; cited in Moyers et al., 2007). Utterance chains consisted of groups of utterances beginning with baseline CCT, followed by therapist utterance codes, and subsequent client speech codes.

‘CACTI’ enabled the live application of codes to the audio information, that is, codes applied while listening to the vocal cues. This enabled vocal cues to be captured that would have been lost had the data collection process used written transcriptions. At the time of coding the investigator had listened to the recording at least twice. If either client or therapists’ speech was inaudible, the ‘inaudible’ code was assigned to the utterance and this data was excluded from the analysis. Reciprocal client and therapist speech was coded for several turns or exchanges in the conversation, following baseline CCT (e.g. client-therapist-client*-therapist-client-therapist-client etc.). This occurred when CCT was still present amongst client utterances on the second occasion they spoke*. This was so that all transitions between therapist-client behaviour, that follow CCT could be analysed. Data collection for a specific section of the recording ceased when:

- the client either uttered CT alone before the therapist spoke again; or
- The client spoke CT alongside Ask / Follow Neutral speech: or
- spoke three utterances in a row of Ask / Follow Neutral.

Coding would then resume when the next identified instance of CCT was spoken. (See Appendix C for the code list, including the corresponding CACTI label and numerical value for the analysis. Once the recording had been coded, the data was converted into a file readable for GSEQ. At this stage, utterance codes were collapsed into one of seven categories,

four client and three therapist categories (see section 2.7.3.2 for categories). Turn-taking in conversation means that usually more than one utterance is spoken by the client before the therapist responds. Likewise oftentimes, the therapist speaks several utterances (stage 2 of the chain) in response to client speech (stage 1 of the chain). Similarly the client response (stage 3 of the chain) to the therapist may include several utterances. The utterance codes were arranged so that each turn in conversation was represented by a client or therapist category. These strings of categories formed sequential chains necessary for the transitional analysis required to answer the current research question. An example of this data conversion process involving categorising codes is shown in Appendix E.

2.7.2 Identifying counter-change talk

The first stage of data collection involved identifying baseline counter-change talk to determine the section of the recording to be analysed.

Counter-change talk is speech which indicates the client's:

1. present state of mind about not changing and is defined as a client's
2. reluctance to change or their desire to maintain the status quo in relation to a
3. specific target behaviour, in this case drinking.

Counter-change talk does not include speech relating to anything other than drinking behaviour. It includes clients' vocalisations of: the enjoyment of drinking (desire), an absence of control in stopping (ability), positive aspects of continuing to drink (reasons), a lack of urgency or need to stop (need), statements explaining the clients' intention to continue (including double negatives e.g. "I don't want to not be able to drink") are classified as negative commitment, and reports of recent drinking activity (taking steps). If the client discusses a past opinion about not changing this would be classified as neutral language, however if it is recent past this was classified as CCT. "Recent" past is defined as within the

last two weeks before MET session 1, or within the weeks during therapy for MET sessions 2 and 3. This definition of “recent” also applied to client talk about drinking behaviour, for taking steps. The six main types of counter-change talk (desire, ability, reasons, need, commitment and taking steps) are the opposite value of Amrhein’s (2004) classifications of change talk. Vocalising negative aspects of drinking is classified as ‘change talk’ as it reflects positive commitment to change.

Discord or confrontation in the therapeutic relationship were not analysed as independent concepts but were captured in data collection where speech related to the target behaviour of drinking. Previous process research investigators have not reported if and how these behaviours were captured. The current investigation used the MI-SCOPE (Motivational Interviewing Sequential Code for Observing Process Exchanges) manual, which defines counter-change talk as described above (Martin et al., 2005). When discord or confrontation is present in client speech relating to the target behaviour, the MI-SCOPE states that the content of the speech decides how discord or confrontation should be coded. Language supersedes vocal tone. Likewise, an MI-consistent verbal response from a therapist that had a seemingly MI-inconsistent tone of voice was coded as MI-consistent. These decisions were made to uphold as far as possible, an objective interpretation of the data, and to adhere as closely as possible to the MI-SCOPE manual. The use of the MI-SCOPE in this thesis research means that the standardised behaviour codes are confined to a set list but conveniently consistent and comparable with previous research to date (Barnett et al., 2014; Brown, 2014).

2.7.3 Coding manuals

All speech behaviours were coded using the MI-SCOPE (Sequential Code for Observing Process Exchanges) (Martin et al., 2005). The MI-SCOPE is a MI-specific coding

manual was developed to encode, record and transcribe client and therapist interactions. The manual was designed to focus on sequential exchanges to investigate important constructs in motivational interviewing, therapy process and client outcome. It incorporates adapted versions of the MISC (Motivational Interviewing Skill Code) (Miller, 2000) and the Commitment Language Coding System (Amrhein, 2000; cited in Moyers et al., 2007). Further details, including examples can be found in the: MI-SCOPE manual, the code list and the supplementary coding framework protocol (see Appendix B, C and D respectively).

The MI-SCOPE contains forty-six therapist behaviour codes (see appendix B), some of which are valued as positive or negative. The MI-SCOPE authors, Martin et al. (2005) suggest collapsing therapist codes into five broader categories: MI-consistent (MI+ or MICO), MI-inconsistent (MI- or MIIN), Question, Reflection and Other. The MI-SCOPE authors suggest collapsing client behaviours into three categories: Counter-Change Talk, Change Talk and Other (CCT, CT and Other). Martin et al. (2005) do not give explicit instructions as to which code should fall into which category but advise that researchers can adjust their method of categorisation to suit the requirements of their research.

In this investigation therapist speech was grouped into three categories: MI-consistent (MICO), MI-inconsistent (MIIN) and Therapist Other (TOther). Client speech was grouped into four categories: counter-change talk (CCT), ambivalence (AMBIV), client–other (CLOther) and change talk (CT).

Therapists' behaviour is considered to be MI-consistent if they 'Express empathy', 'develop discrepancy', 'support self-efficacy' and 'roll with resistance'. Investigators can then infer from literature (Rollnick & Miller, 2013) that MI-SCOPE codes such as 'emphasize control' and 'affirm' would be categorised as MI-consistent. MI-inconsistent behaviour opposes the MI principles; therefore investigators can infer that MI-SCOPE codes

such as ‘confront’ and ‘warn’ are MI-inconsistent. Unambiguous, ‘Other’ therapist behaviours in the MI-SCOPE would be ‘filler’ or ‘structure’.

A code list and supplementary coding manual was created (see Appendix C and D respectively). Each code has a corresponding abbreviation for use in CACTI and a numerical value for analysis. Table 4 and 5 below display the overall to which categories each behaviour code was assigned. The code list and supplementary coding manual established a clear and calibrated coding and categorisation system for data collection, and to increase internal and inter-rater consistency,

Table 4. Client behaviour codes and categories

Client Category	Label	Behaviour Code
Counter-Change Talk (CCT)	Desire	D-
	Ability	A-
	Reasons	R-
	Need	N-
	Taking Steps	TS-
	Commitment	C-
Change Talk (CT)	Desire	D+
	Ability	A+
	Reasons	R+
	Need	N+
	Talking Steps	TS+
	Commitment	C+
Client Other (CLOther)	Ask / Follow Neutral	AFN

Table 5. Therapist behaviour codes and categories

Category	Label	Behaviour Code
MI-Consistent (MICO)	Affirm	AFF
	Emphasize Control	ECON
	Open Question	OQ
	Seek Permission	PMS
	Support	SUP
	Summarise	SUM
	Simple Reflections of:	
	CT	SR+
	Other	SR0
	Both CT and CCT	SR+/-
	Complex Reflections of:	
	CT	CR+
	Other	CR0
	CT & CCT	CR+/-
MI-Inconsistent (MIIN)	Advise	ADV
	Confront	CON
	Closed Question	CQ
	Direct	DIR
	Opinion	OPN
	Warn	WAR
	Simple Reflection of:	
	CCT	SR-
	Complex Reflections of:	
	CCT	CR-
Therapist Other (TOther)	Feedback	FB
	Filler	FIL
	Self-Disclose	SDIS
	General Information	GI
	Structure	STR
	Raise Concern	RCON
	Follow Neutral	FN

*MI-Consistent if preceded by 'Seek Permission'

The criteria for categorisation in this research differed from the suggestions of the MI-SCOPE authors in the following ways:

- 1) 'Inaudible' codes were included for both the client and therapists' speech, due to the poor sound quality of some recordings. Inaudible is a new code not included in the MI-SCOPE.
- 2) Dependent on the context, questions and reflections were included in either MI-consistent or MI-inconsistent therapist categories. In the MI-SCOPE 'questions' and 'reflections' are two distinct categories and are not categorised as MI-consistent or MI-inconsistent.
- 3) 'Ambivalence' was included as a new client category. MI-SCOPE authors did not suggested the use of this category.
- 4) An additional client code was created. The commitment +/- (C+/-) code was applied to ambiguous utterances about commitment to change (e.g. dubious goal setting), or condensed statements of conflicted (ambivalent) commitment. (Further explanation is provided below and in the supplementary coding manual in Appendix D).

Inaudible behaviour codes were excluded from the analysis.

Although the suggested categories question and reflection may seem self-explanatory, there are a range of possible questions and reflections with both positive and negative values, therefore these categories are open to interpretation. The categorisation method of questions and reflections will now be discussed.

Specific questions and reflections were incorporated within either MICO or MIIN according to the researcher's interpretation of the MI literature and the UKATT MET manual (Tober et al., 2002). Using the supplementary coding manual in this research meant that open

questions were categorised as MI-consistent because open questions allow more autonomy in the client response than closed questions, and enhancing autonomy is a key principle in MI (Miller and Rollnick, 2013). This differed from the MI-SCOPE, which assigns a negative or positive value to open and closed questions. The absence of an assigned value to open and closed questions enabled faster coding and less room for error. Inaccurate or unreliable coding was a potential problem for using both negative and positive open and closed questions because there was ambiguity about the way they would be categorised. The MI-SCOPE manual gives the following example of an open question: “What’s the up side to drinking for you?” (Martin et al., 2005, p6). The MI-SCOPE authors code this as ‘OQ-’ (open question about CCT) because it is encouraging the client to talk about reasons to continue drinking. Unless researchers using the MI-SCOPE collapse behaviours into the question and reflection categories, they must choose whether an OQ- would be MI-consistent or MI-inconsistent. Both might be the case. The categorisation of OQ- is ambiguous because it is both in keeping with the MI model to facilitate the client’s exploration of ambivalence about the target behaviour, and in conflict with MI strategies to direct the client towards resolution of ambivalence, which involves eliciting change talk. It was therefore decided that open questions would be categorised as MI-consistent and closed questions as MI-inconsistent, because open questions allow more autonomy in the client response than closed questions, and enhancing autonomy is a key principle in MI (Miller and Rollnick, 2013). In the current research, closed questions were classified as MI-inconsistent because closed questions could reduce client’s freedom to verbalise their thoughts about change and resolve their dissonance (Festinger, 1962). Therapists’ closed questions were also prone to communicating a directive, unsupportive, even accusatory tone. For example an open question could be framed: “how might you be able to do that?” whereas a closed question asking something similar may be spoken as: “Do you have any idea how you might be able to

do that?” (Martin et al., 2005, p6). Additionally, the UKATT MET manual (Tober et al., 2002) directed a structure to sessions where therapists encouraged participants to explore reasons for and against their drinking behaviour. An open question about the benefits of drinking occurred regularly, usually in the first MET session.

The categorisation of therapists’ reflections was also carefully considered. In the current research only simple reflections of counter-change talk (SR-) and complex reflections of counter-change talk (CR-) were categorised as MI-inconsistent. Selective reflection of change talk has been consistently evidenced as a significant predictor of the immediate subsequent client response (Barnett et al, 2014; Glynn & Moyers, 2010; Gaume et al., 2008; Magill et al., 2014; Moyers et al., 2007; 2009; Vader et al., 2010) and was categorised as MI-consistent behaviour. Simple and complex reflections of both change talk and counter-change talk together (SR+/- and CR+/-) were categorised as MI-consistent because they could be a double-sided reflection or, more simply, reflect the client’s ambivalence. An MI therapist may seek to reflect some counter-change talk (CCT) to demonstrate to the client that they are listening to them and acknowledging their experience (‘express empathy’). They may also seek to incorporate previously uttered change talk within a reflection of recent counter-change talk to ‘develop discrepancy’ between the client’s attitudes, gently directing the client towards change. (Rollnick & Miller, 2013). It would be difficult for the MI therapist to develop discrepancy without any reflection of counter-change talk.

There is one exception to this general rule of reflecting change talk and refraining from reflecting counter-change talk. A unique feature of MI is the intentionally paradoxical statement or “amplified reflection” (Miller and Rollnick, 2013, p199). An amplified reflection involves the therapist exaggerating counter-change talk as they reflect this back to the client. The use of amplified reflections is intended to direct the client back towards arguing for change. It has been theorised and evidenced that clients with high reactance are

responsive to paradoxical interventions (Fogarty, 1997; Horvath & Goheen, 1990; Shoham-Salomon, Avna and Neeman, 1989). Despite this evidence, it was anticipated that the ambiguity between ‘amplified reflection’ (an MI-consistent behaviour) and ‘confrontation’ (an MI-inconsistent behaviour), would make it difficult to rate amplified reflections consistently and reliably. It was also anticipated that therapists’ use of amplified reflection would be minimal, as it can be deemed provocative. Moreover, the MI-SCOPE did not include a different reflection code to account for such paradoxical interventions.

Another example of how this method of coding and categorisation differed from Martin et al. (2005) was the ambivalence category. Ambivalence (the presence of both CT and CCT in a group of utterances) was distinguished from counter-change talk in order to assess change more sensitively. The inclusion of an ambivalence category was necessary because more than one client code could be present alongside another in the same category, indicating opposing motivations. For example desire to stop drinking (D+) can be spoken immediately before desire to continue drinking (D-), both are valid expressions of the client’s attitude towards drinking and these opposing utterances combined indicate ambivalence.

An additional client code was created to enable increased sensitivity to identify ambivalence behaviours, and potentially the effectiveness of therapist behaviours. In addition to the positive and negative values of change talk and counter-change talk subtypes (desire, ability reason, need, taking steps and commitment), the supplementary coding manual included a new code with both positive and negative values for commitment (C+/-), similar to the MI-SCOPE SR+/- and CR+/- codes. This code was applied to condensed statements of ambivalence. For example, the client stated mixed feelings about stopping or reducing their alcohol intake, or they chose a goal to reduce drinking that requires the least amount of commitment. Ambiguous commitment statements were different from single utterances of

change talk immediately followed by single utterances of counter-change talk. Single statements were coded separately.

2.7.3.1 Aggregation of codes into categories

This research has grouped several different utterances from each speaker under one category to represent each “turn” in the conversation. The following is a sample from the data:

AFN-AFN-TSneg FN-OQ0 Rpos-Rneg

Therapist speech is underlined (see code list in Appendix C or full code names). In the example above AFN-AFN-TSneg was classified as the aggregated category CCT, FN-OQ0 was classified as aggregated category MICO, and Rpos-Rneg was classified as the aggregated category AMBIV. Therefore the example above was categorised as CCT MICO AMBIV and it was these categories that were used in the analysis.

2.7.3.2 Criteria for client and therapist speech categorisation

There were four client categories, counter-change talk (“CCT”), Other (“CLOther”), Ambivalence (“AMBIV”) and change talk (“CT”). Table 6 below that shows how a series of coded utterances were categorised.

Table 6. Criteria for categorising groups of client codes

Category	Criteria
CCT	CCT alone or CCT alongside neutral speech (AFN or C+/-)
CLOther	Neutral speech in the absence of either CT or CCT
AMBIV	Presence of both CT and CCT, irrespective of how much
CT	CT alone or CT alongside neutral speech (an absence of CT)

Although ambivalence (“AMBIV”) was used as a category for the client’s second utterance (or the third part in the sequential chain) it was not used for the baseline because CCT formed the beginning of the sequential chain, regardless of additional client utterances that followed it. What is called “CCT” at baseline, may have had adjacent CT to the CCT, this aggregation would be coded as AMBIV if present in the third part of the chain. The investigation focussed on how the therapist responds following the presence of any CCT and what happens after this. A therapist may ignore CCT and focus on another aspect of the client’s speech. The frequency of therapist responses may indicate if and how much the therapist may have been influenced by hearing baseline CCT.

Therapist speech was categorised into 3 categories: MI-consistent (“MICO”), MI-inconsistent (“MIIN”) and Other (“TOther”). Table 7 below outlines the criteria for categorisation of therapist behaviours.

Table 7. Criteria for categorising groups of therapist codes

Therapist Category	Criteria
MIIN	MIIN alone, or MIIN alongside neutral speech (e.g. structure, “STR”), or when present alongside MICO, more MIIN than MICO utterances
MICO	MICO alone, or MICO alongside neutral speech, or When present alongside MIIN, more MICO than MIIN utterances
TOther	Absence of MICO or MIIN utterances

The data was imported into the software package GSEQ (General Sequential Querier; Bakeman & Quera, 2011) and compiled into readable file for analysis. All data files were pooled whilst ensuring that the data from each recordings remained distinct, to ensure sequential chains were preserved.

2.7.4 Summary of procedure

- i) Prepare CACTI xml notepad by creating behaviour codes
- ii) Select and screen recordings (see sampling)
- iii) Encode and convert the recording into a readable file
- iv) Playback, demarcate and code selected speech in the recording through ‘CACTI’ and create an output file
- v) Convert CACTI output into the appropriate file format for GSEQ
- vi) Categorise codes and sequence data
- vii) Import into GSEQ and compile into new file format
- viii) Run descriptive statistics and transitional probability analysis in GSEQ

2.8 Data analysis procedure

The raw data consisted of several utterances spoken by either the client or the therapist, and the data conversion process involved categorising these utterances to represent the client and therapists’ turn in the conversation. Each therapist category was paired with a client category to form an “event” (e.g. MIIN-CCT), so that the transitions between therapist and client speech categories could be analysed. “Events” will be described as “transitions” for this reason. Data from all the recordings were pooled for the main analysis.

General characteristics of the data were investigated using multi-event data analysis using GSEQ 5.1 software (Bakeman & Quera, 2011). Multi-event data analysis was used

because each category contained several utterances, each pair contained two categories and each recording contained several transitions.

Descriptive statistics including frequency distribution tests, overall frequency and relative frequency calculations were run. Transitional probability analysis was performed by calculating conditional probabilities (percentage likelihoods of a target behaviour following a given behaviour) and odds ratios.

2.9 Description of analysis terms

2.9.1 Frequency and relative frequency

With multi-event data, descriptive statistics involve counts of "...the number of multi-events checked for a particular code" (i.e. frequency) and counts of, "...the proportionate use of events relative to a specified set of codes" (Bakeman & Quera, 2011, p97-98). In this investigation, counts were taken of the number of times a particular category (e.g. CCT) occurred in the data, and of the number of times this occurred compared with other categories. The terms frequency and relative frequency are used throughout this thesis. GSEQ uses different terminology to describe the same descriptive statistics (namely duration and relative duration). This thesis uses the more widely used terms frequency and relative frequency.

2.9.2 Joint frequency and expected frequency

The joint frequency is the count of the number of times that both the given and target behaviour were observed together, e.g. the observed frequency of CCT following MIIN. The expected frequency value is the number of times the given and target behaviours would be expected to be observed together, given the conditions of the data. It is the number of times an event occurs when it is no more likely to occur than by chance.

2.9.3 Conditional probability

The conditional probability is the likelihood of an event ‘b’ occurring given event ‘a’ has occurred, e.g. observations of CCT when MIIN has been observed.

2.9.4 Odds ratios

The odds ratio provides an estimate of the odds of a target event occurring dependent on the presence of a given event. This contrasts with conditional probabilities which capture a value assuming a given and target event are independent.

When the $OR = >1$ this indicates that a positive relationship exists, meaning that when a given category is present then the odds of the target category occurring increase. For example, the presence of MIIN is associated with the presence of CCT. When the $OR = 1$ or close to 1, this indicates a null value (e.g. the behaviour is no more likely to occur than by chance).

When the $OR = <1$, a negative relationship exists, meaning that the presence of a given category will decrease the odds of a target category occurring. For example, where MICO increases CCT decreases (Szumilas, 2010).

According to Bakeman & Quera (2011) and Haddock, Rindskop and Shadish (1998) the values in table 8 represent the strength of the relationship described by odds ratios.

Table 8. Categorisation of odds ratios according to strength of the predictive relationship

	Weak	Moderate	Strong
Positive Relationship	1.25 - 2.0	2.0 - 3.0	3.0 +
Negative Relationship	0.5 - 0.8	0.33 – 0.50	< 0.33

2.10 Reliability procedure

Two types of reliability checks were performed in the data collection (explained below). The first part of the reliability process focussed on the reliability of identifying CCT. Five recordings (10%) were selected from a total of 50 recordings; 2 were used for investigator training, and 3 were selected for reliability checks with an expert in Motivational Interviewing. The expert (GT) was the Clinical Service Manager and Consultant Addictions Psychologist in the Leeds Addiction Unit.

The second part of the reliability process focused on the reliability of coding therapist and client speech using the adapted MI-SCOPE manual. An additional 5 recordings (10%) were selected for checking the reliability of coding with an independent researcher (HC) who has research experience in rating MET recordings and is employed by the Leeds Addiction Unit.

Training and reliability checks took place at three time points.

- 1) Training on identifying CCT using 2 recordings took place in the initial stages of data collection.
- 2) Checking reliability on the identification of CCT in 3 recordings occurred at mid-point of data collection.
- 3) Checking reliability on the coding of therapist and client speech took place in the final stages of data collection.

The recordings were selected at random with the exception of one, which was chosen to be reviewed by the MI expert in the training stage because it contained high frequencies of counter-change talk. Agreement between raters was tested by performing Cohen's Kappa calculations (Cohen, 1960). An acceptable kappa (agreement) score was defined as 0.6 which was based on literature by: Landis and Kock (1977) who characterised agreement values

of .41-.60 as moderate and .61-.80 as substantial; and Fleiss (1981) who characterised agreement values of .40-.75 as fair-good.

2.10.1 Reliability with MI expert: the 1st client utterance

The initial counter-change talk (CCT) identification was completed by an MI Expert (GT). This quality check was to assess whether CCT was identified reliably. Initially the process contained elements of training alongside reliability. The investigator (LD) provided the expert (GT) with examples of CCT statements from the data.

- i) For the first recording, the expert was presented with a list of statements that the investigator had identified as being CCT. The expert stated her agreement or disagreement with whether the identified statements were examples of CCT. This method of reliability was not blind since the expert was aware that the investigator had identified all the statements discussed as CCT.
- ii) For the second recording, statements that both the investigator and expert agreed to be CCT were coded independently (blindly) according to subtype of CCT (e.g. Desire-, Ability-).
- iii) For the third, fourth and fifth recording, the expert and investigator listened to the same recording separately and blindly identified CCT statements. Agreement was assessed using this method to identify if the investigator was identifying CCT reliably (e.g. if they were identifying statements that were not deemed to be CCT by the expert, or if they failed to identify instances of CCT that the expert identified). These checks took place up until mid-point in the data collection phase.

For the third part of the process (recording 4, 5 and 6), the agreement and disagreement between the researcher and expert was subdivided before the reliability analyses was completed. Since it was possible that audibility could be a cause for disagreement, both

researchers identified sections of the recording that they could not hear. This helped to establish why a CCT statement was not identified if present in this section of the recording. Sections that were not heard by either party were excluded from the reliability analysis.

- 1) Levels of agreement on the initial identification of CCT statements (whether or not they selected the same qualitative information from the recording) were examined.
- 2) Agreement was assessed regarding data identified by either the expert or the investigator.

Due to the possibility of raters missing information or mishearing speech in the recording, the following, additional rule was established. If either the investigator or expert did not identify a CCT statement, the statement was shown to the other party. Providing both parties were in agreement that the utterance was CCT, it was said that there was agreement. However, if when both parties were aware of the statement and they disagreed, this was deemed to be an instance of disagreement.

2.10.2 Reliability with an independent researcher: categorisation of the therapist's response and the client's subsequent response.

The investigator identified instances where CCT occurred and coded. The investigator then identified the therapist's utterances in response to this coded CCT, and the client's subsequent utterances to establish the sequential chain. The statements in the sequence were given to the independent researcher to use in the reliability process. The independent researcher then coded blind the pre-identified therapist and client utterances that followed CCT. The therapist and client statements coded by both raters, prior to categorisation comprised the raw data. The codes were collapsed into categories prior to reliability analysis.

Kappa calculations were performed to test agreement of categorical data between raters. Cross tabulations were calculated to detect instances of disagreement between raters for

specific behaviours. Following cross tabulations, a more detailed inspection of the raw data was undertaken to investigate if there were clear reasons for any instances of disagreement.

3. Results

3.1 Reliability

3.1.1 Investigator and MI expert agreement on the identification of CCT

Two raters, GT (the MI expert) and LD (the investigator), blindly identified CCT statements when listening independently to the three selected recordings. Agreement for the initial identification of CCT statements was examined, that is, whether or not they selected the same spoken information from the recording.

Of the total CCT statements identified (n=137), LD identified 99 (72%) and GT identified 100 (73%) of instances of CCT. There were 37 statements (28% of the 137) that LD identified where GT did not, which is higher than expected given the overall distribution of the data. There were 38 instances (28% of the 137) where GT identified CCT when LD did not. Overall, 62 of the statements (45%) were identified independently by both raters, meaning that 45% of the time GT and LD identified the same instances of CCT from the recording. The results indicate that the proportion of agreement by chance exceeds the proportion of agreement between the two raters.

When the CCT statements were discussed LD and GT agreed that all 137 of the statements were CCT.

3.1.2 Investigator and independent researcher agreement on behaviour categories

This analysis tested the agreement between the investigator (LD) and the independent researcher's (HC) coding of therapist and client behaviour that followed baseline CCT.

Cohen's Kappa tests indicated strong agreement between raters for therapist speech ($k = .674$, $p=0.00$) and client speech ($k= .697$, $p=0.00$).

Table 9 and 10 are cross tabulations displaying instances of agreement and disagreement across the categorised behaviours that were rated by HC and LD.

Table 9. Cross tabulation of therapist categorisation

		HC Coding				
		MICO	MIIN	TOther	Total	
LD Coding	MICO	Count	33 ^a	8 ^b	4 ^a	45
		% of Total	45%	11%	5%	60%
	MIIN	Count	1 ^a	22 ^a	0 ^a	23
		% of Total	1%	30%	0%	32%
	TOther	Count	0 ^a	1 ^a	5 ^a	6
		% of Total	0%	1%	7%	8%
Total		34	31	9	74	
		47%	43%	12%	100%	

All the rater values did not differ significantly from each other at the .05 level. Superscript a denotes agreement between raters on the behaviour category. Superscript b denotes instances of disagreement that are of particular interest

Table 10. Cross tabulation of client categorisation

		HC Coding					
		CCT	AMBIV	CLOther	CT	Total	
LD Coding	CCT	Count	49 ^a	0 ^a	3 ^a	1 ^a	53
		% of Total	34%	0%	2%	1%	37%
	AMBIV	Count	2 ^a	0 ^b	0 ^a	1 ^a	3
		% of Total	1%	0%	0%	1%	2%
	CLOther	Count	5 ^a	2 ^a	36 ^a	0 ^a	43
		% of Total	4%	1%	25%	0%	30%
	CT	Count	11 ^b	0 ^a	4 ^a	29 ^a	44
		% of Total	8%	0%	3%	9%	31%
	Total		67	2	43	31	143
			47%	1%	30%	22%	100%

All the rater values did not differ significantly from each other at the .05 level. Superscript a denotes agreement between raters on the behaviour category. Superscript b denotes instances of disagreement that are of particular interest

A total of 217 categorised utterances were analysed. With the exception of AMBIV, which has a small count compared with other categories, the counts of agreement between raters are greater than any disagreements.

LD coded 45 instances of MICO behaviours (60% of the 217 utterance groups) and HC coded 34 instances of MICO behaviours (47% of the 217 utterance groups). Both raters agreed on 33 of LD's 45 instances, which equates to 73% agreement on MICO. Of the 34 instances coded as MICO by HC, both raters agreed on 33 counts (97%) of these.

LD coded 23 instances of MIIN behaviours (11% of the 217) and HC coded 31 instances of MIIN behaviours which comprised 14% of the total. Both raters agreed on 22 counts of the 23 (96%) LD coded, and of the 31 instances HC coded, LD agreed with 71% of these. Overall, agreement did not fall below 71% for these key therapist behaviours, indicating acceptable agreement (Landis and Kock, 1977; Krippendorff 1980).

There were 12 instances where LD coded a behaviour as MICO where HC did not. In 8 of these instances HC coded behaviours as MIIN. There was 1 instance where LD coded a behaviour as MIIN, where HC coded it MICO.

Agreement between raters coding of CCT and CT was also of interest. LD coded 53 behaviours as CCT comprising 37% of the total and HC coded 67 counts of CCT, comprising 47% of the total. Of the 53 instances coded CCT by LD, HC agreed with 49 (92%) of these. Of the 67 instances coded CCT by HC, LD agreed with 73% of these.

LD coded 44 (31%) behaviours as CT and HC coded 31 (22%) of the overall total. Both raters agreed on 29 instances of CCT, which comprised 66% of LD's and 94% of HC's counts. LD coded 1 instance (1%) of HC's CCT behaviours as CT and HC coded CCT 11

instances (21%) of behaviours LD coded as CT. Overall, agreement did not fall below 73% for coding CT and CCT behaviours indicating substantial agreement.

Across the instances of disagreement there was no clear, consistent reason for the different attribution of codes that led to inconsistent therapist and client behaviour categories. Of the 19 instances where HC rated a statement as CCT and LD rated either CT or CLOther, 8 of these behaviours (42%) were interpreted by HC as reasons not to change (R-). In relation to therapist language, focussing on simple and complex reflections, there were 5 instances where HC valued these as MI-inconsistent (SR- or CR-) and LD rated these as TOther (SR0 or CR0) or MI-consistent (SR+ or CR+). On 3 occasions LD rated simple reflections as negative and therefore MI-inconsistent and HC valued them as neutral or positive. Overall, there were more instances (n=23) of HC rating a therapist's behaviour as MI-inconsistent and a client's behaviour as counter-change talk, than LD doing so (n=4).

3.2 Descriptive statistics

The sample consisted of speech sequences beginning with CCT from 50 recordings involving 28 MET therapists and 44 clients. The majority of therapists were present in only 1 recording (n=23, 82%), with the remainder were present in 2 or more recordings (n= 5, 18%). The sample was comprised of 3 recordings (6%) from 1 client, 2 recordings (4%) from 3 clients and 1 recording from the remaining clients (n=41, 82%). From the total sample of n=50 recordings, 18 of these were the first session of MET, 19 were the second and 13 were the third and final MET session.

The dataset included 1570 speech categories representing 785 transitions (i.e. therapist-client utterance pairings).

The number of transitions varied across the 50 recordings. A test of normality including interquartile ranges showed positive skewness (3.04) and kurtosis (3.50) revealing that the sample was not normally distributed (see figure 7).

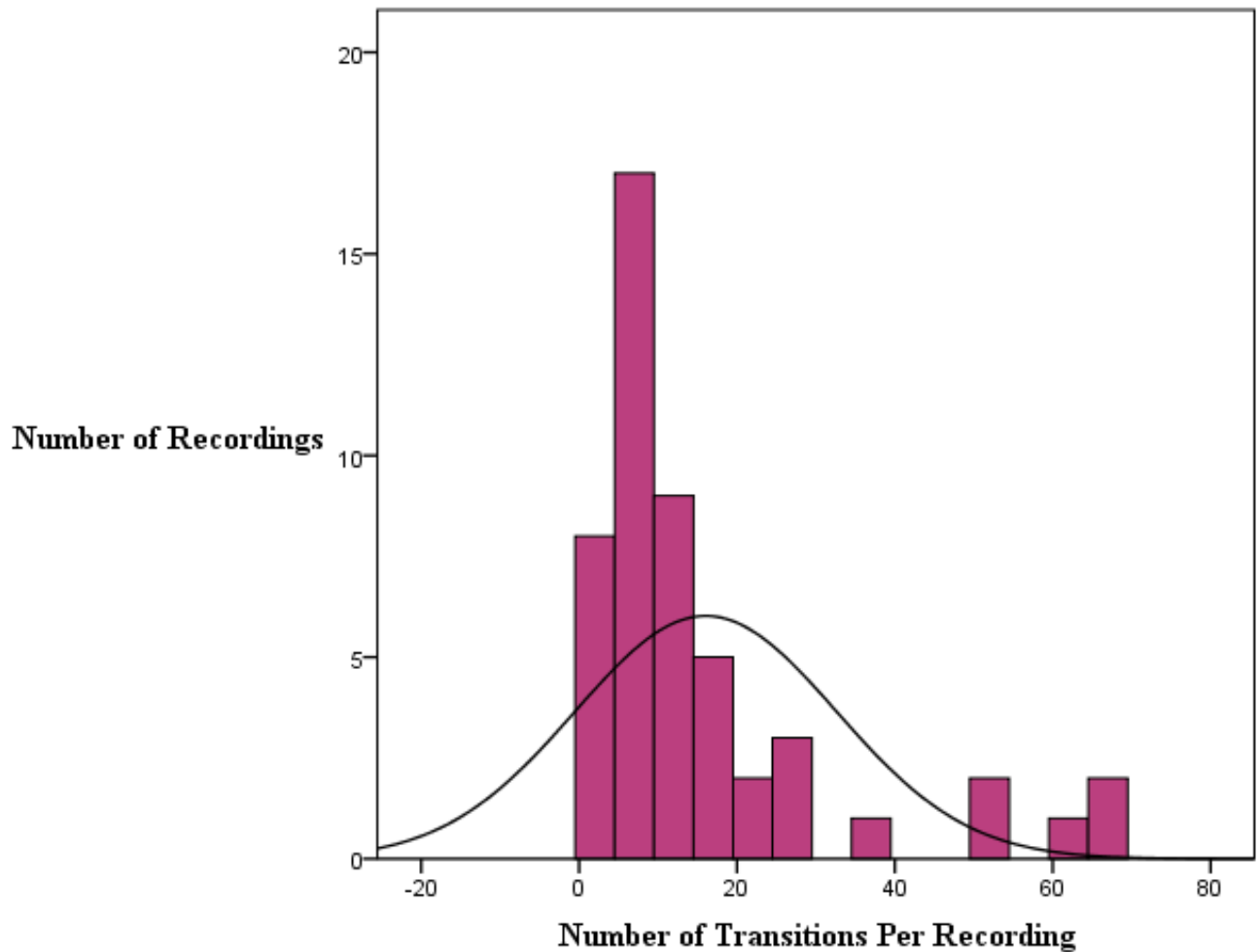


Figure 7. Frequency distribution of the number of therapist-client transitions per recording

There was high variance in the number of transitions different therapist-client pairs generated across each recording (range =65, median = 9.5, IQR = 7-64.25).

There were five sessions which contained >51 transitions annotated in table 9.

Record was kept of the clients and therapists, and the number of recordings and transitions associated with them, to calculate the proportion of data these clients and therapist contributed to the sample. This enabled detection of the extent to which outliers contributed to the pooled data and if this was disproportionate. Client and therapist transition frequencies are shown in table 11 below.

Table 11. Distribution of transitions displayed by therapist, client and MET session

Therapist	Client	MET Session	Recording Number	No. of Transitions	% of Sample (No. Transitions per Recording / Total no. Transitions)
Alpha	A ^a	1	961	3	0.4%
		2	958	5	0.6%
		3	61	12	1.5%
		2	43	35	4.5%
		3	25	2	0.3%
Bravo	D	1	490	3	0.4%
		2	489	8	1.0%
		1	480	2	0.3%
		2	473	8	1.0%
Charlie	H ^a	1	317	67 ^b	8.5%
		2	265	67 ^b	8.5%
	I	2	341	51 ^b	6.5%
		2	344	8	1.0%
		3	23	15	1.9%
		2	7	10	1.3%

	M	3	493	8	1.0%
Delta	N	1	57	15	1.9%
	O	1	248	53 ^b	6.8%
	P	3	474	7	0.9%
Echo	Q ^a	1	380	12	1.9%
	R ^a	3	203	12	1.9%
	S	1	525	20	2.5%
	T	2	690	19	2.4%
Foxtrot	U	3	710	7	0.9%
	V	2	303	9	1.1%
	W	1	207	4	0.5%
Golf	X	1	267	8	1.0%
	Y	2	706	62 ^b	7.9%
Hotel	Z	1	167	8	1.0%
	AA	2	28	11	1.4%
India	BB	3	31	5	0.6%
	CC	3	111	8	1.0%
Juliet	DD	1	606	14	1.8%
	EE ^a	1	894	5	0.6%
Kilo		2	892	3	0.4%
	FF	3	387	7	0.9%
Lima	GG	2	2	4	0.6%
Mike	HH	2	74	14	1.8%
November	II	2	964	26	3.3%
Oscar					

Papa	JJ	1	707	9	1.1%
Quebec	KK	2	690	19	2.4%
Romeo	LL	2	576	25	3.2%
Sierra	MM	3	425	7	0.9%
Tango	NN	1	605	14	1.8%
Uniform	OO	2	604	11	1.4%
Victor	PP	1	479	4	0.5%
Whiskey	QQ	1	458	26	3.3%
X-ray	RR	1	434	8	1.0%
Yankee	SS	2	440	24	2.7%
Zulu	TT	1	439	18	2.3%
Total no. of Transitions				785	

^a The same client was used more than once in the sample

^b More than or equal to 51 transitions yielded from one recording

Table 11 shows that therapist Charlie with client H provided 134 events, 17% of the total number of transitions. Therapist Charlie with client I provided 51 (6.5%) of the transitions in the sample. Therapist Delta with Client O contributed 53 transitions (6.8%) and therapist Hotel with client Y contributed 62 events or 7.9% of the sample. This means that 300 transitions (38% of the sample) are from 4 therapist-client dyads, and 2 of which involve the same therapist.

3.2 Overall frequencies of therapist and client speech categories

Relative frequency is the number of observed occurrences of a particular speech category divided by the total number of categories spoken. Probability is the most important aspect of

the data in that it shows the likelihood of that particular category of speech being spoken by a client or a therapist. However, probability calculations are effectively the same as relative frequency calculations in this case because only one experimental trial was conducted with this data. More experimental trials would be necessary to gain a predicted outcome or theoretical probability. Table 12 below shows the frequency and relative frequency (probability) of each category found in the pooled dataset. The relative frequency of one client category in relation to other client categories can be calculated by multiplying the relative frequency value by 2 (e.g. relative frequency of CCT in relation to other client behaviours would be $.18 \times 2 = .36$). The same applies to therapist relative frequency values.

Table 12. Frequency and relative frequency of the occurrence of speech categories

	Categories	Frequency	Relative Frequency
Client	CCT	286	.18
	AMBIV	217	.14
	CLOther	187	.12
	CT	95	.06
Therapist	MIIN	199	.13
	MICO	502	.32
	TOther	84	.05
Total Categories		1570	1.00
Total Transitions		785	

The results showed that, following counter-change talk (CCT), MI-consistent (MICO) speech was the most commonly observed category relative to all speech and Therapist Other (TOther) was the least common. Counter-change talk was the most common client category and

change talk (CT) the least common. Alternative hypothesis 2, states that therapists are more likely to respond to CCT with either TOther or MICO behaviours. The finding that MICO was spoken most by therapists supports alternative hypothesis 2, however the relatively rare occurrence of TOther does not.

3.3 Transitional probability analysis

This section of the analysis focussed on investigating the transition between the therapists' behaviour following CCT and the clients' subsequent behaviour. Transitions are analysed by investigating the probability of one speech category following another.

The alternative hypotheses 1 predicted that:

- a) An MI inconsistent (MIIN) therapist response is more likely than by chance to be followed by CCT or ambivalence,
- b) An MI consistent therapist (MICO) response is more likely than by chance to be followed by CT, ambivalence or neutral client speech than MIIN, and
- c) 'Other' therapist responses are more likely than by chance to be followed by neutral client speech

Table 13 below is an N-Way (3x4) contingency table that displays information about the transitions between therapists' behaviour following CCT and client's subsequent behaviour. Here CCT, AMBIV, CLOther and CT are client target responses that followed a given therapist behaviour of either: MICO, MIIN, or TOther.

Table 13. Transitional probabilities between therapist and client speech categories

Given	Target	Joint Frequency	Expected Frequency	Conditional Probability	Odds Ratio	Confidence Intervals (95%)		P Value
						Lower	Upper	
CCT-MIIN	CCT	107	72.50	0.54	2.64	1.90	3.67	0.00
CCT-MIIN	AMBIV	37	55.01	0.19	0.52	0.35	0.77	0.00
CCT-MIIN	CLOther	44	47.41	0.22	0.88	0.60	1.29	0.51
CCT-MIIN	CT	11	24.08	0.06	0.35	0.18	0.67	0.00
CCT-MICO	CCT	151	182.89	0.3	0.47	0.35	0.63	0.00
CCT-MICO	AMBIV	163	138.77	0.32	2.04	1.46	2.96	0.00
CCT-MICO	CLOther	107	119.58	0.21	0.69	0.49	0.96	0.03
CCT-MICO	CT	81	60.75	0.16	3.70	2.05	6.63	0.00
CCT-TOther	CCT	28	30.6-	0.33	0.86	0.54	1.41	0.53
CCT-TOther	AMBIV	17	23.22	0.20	0.64	0.34	1.06	0.11
CCT-TOther	CLOther	36	20.01	0.43	2.73	1.74	4.46	0.00
CCT-TOther	CT	3	10.17	0.04	0.25	0.08	0.80	0.01

Table 13 shows that the most likely client response to MI-inconsistent (MIIN) behaviour was CCT (OR= 2.64, CP = .54, P=0.00), which was a significant moderate, positive, predictive association. This means that it was more than twice as likely for CCT to follow MIIN, than it would occur by chance. There was a moderate-weak, negative predictive relationship between AMBIV, CLOther and CT following MIIN. Significant predictive associations were found with AMBIV and MIIN and CT and MIIN. AMBIV was 48% less likely than by chance to follow MIIN (OR= 0.52, CP= .19 , p= 0.00) and CT was 65% less

likely than chance to follow MIIN (OR=0.35, CP= .06, P= 0.00). The MIIN-CT results for MIIN-CT transitions are in line with the alternative hypothesis 1a, which states, “an MI inconsistent (MIIN) therapist response is more likely than by chance to be followed by CCT or ambivalence.” However the MIIN-AMBIV transition results are not consistent with this hypothesis. Hypothesis 1a predicted that AMBIV would be more likely than by chance to follow MIIN, yet the results show that it was significantly (48%) less likely than by chance to follow MIIN.

Table 11 shows that the most likely response to follow MI-consistent (MICO) behaviour was CT. CT was over three times more likely than by chance to follow MICO (OR=3.7, CP= .16, p= 0.00) revealing a strong, positive predictive relationship. There was also a significant positive predictive relationship between MICO and AMBIV, where AMBIV was two times more likely than by chance to follow MICO behaviour (OR=2.4, CP= .32, p=0.00). CCT and CLOther behaviours were both significantly less likely to follow MICO than by chance. Of particular interest is CCT which was 53% less likely to follow MICO (OR=0.47, CP= .3, p=0.00). These findings support hypothesis 1b which states, “an MI consistent therapist (MICO) response is more likely than by chance to be followed by CT, ambivalence or neutral client speech”.

Regarding TOther behaviour, the most likely client response was CLOther (OR=2.73, CP= .43, p=0.00), meaning that CLOther is twice as likely to follow TOther than by chance, and this was a significant, strong, positive predictive association. Therefore, when the therapist talked about topics other than the target behaviour, the client often did the same. This supports alternative hypothesis 1c which states, “‘Other’ therapist responses are more likely than by chance to be followed by neutral client speech”. The least likely target behaviour to follow TOther was CT (OR =0.25, CP= .04, p=0.01). This was a significant negative predictive association evidencing that CT was 75% less likely than by chance to

follow TOther. Although both CCT and AMBIV client behaviours were both less likely to follow TOther than by chance, neither of these relationships were significant.

To summarise the transitional probability results in relation to the hypothesis, the least likely transition was between MICO and CCT behaviours, the most likely transition was between MICO and CT followed by MIIN and CCT, and the most likely response to therapists' neutral speech (TOther) was CLOther. MICO was the most common therapist behaviour under conditions where CCT was the most frequently spoken client behaviour.

4. Discussion

This investigation focused on the sequence of in-session speech behaviours, to discover whether, and how, MI-specific therapist strategies affected one type of resistance (i.e. client counter-change talk). The sequential analysis examined a three-part interaction of initial client CCT, the therapist's response and the client's subsequent response. Firstly, the results of the research are summarised below. This is followed by an evaluation of the methodological features of the investigation. A detailed analysis of more specific elements of measurement employed and their implications for the interpretation of the results is then provided.

4.1 Summary of Results

Overall frequencies and transitional probabilities of therapist and client behaviours were used to answer the research question, "How does a therapist respond to resistance and what impact does this have on the client?" The results show that therapists respond to CCT with MI-consistent behaviours approximately two-thirds of the time, (supporting hypothesis 2). This response is 3.7 times more likely to be followed by client change talk than by chance (supporting hypothesis 1b). Therapists responded to CCT with MI-inconsistent behaviour 26% of the time and, when this occurred, clients were 2.6 times more likely to follow this response with more counter-change talk than by chance (supporting hypothesis 1a). The results of the ambivalent client response were contrary to hypothesis 1a and 1b. An ambivalent response was significantly less likely to follow MI-inconsistent behaviours and two times more likely to follow therapist MI-consistent behaviours than by chance. This indicates (but does not evidence) that the ambivalence categories contained more change talk than counter-change talk, because change talk was more likely to follow MI-consistent

behaviours. Hypothesis 1c was supported in that clients were significantly more likely to talk about behaviours unrelated to drinking, following the therapist doing so.

Predictive relationships between MI-consistent therapist behaviours and change talk were classified as strong (Bakeman & Quera, 2011; Haddock, Rindskop and Shadish, 1998). Predictive relationships classified as moderate included those between: MI-inconsistent therapist behaviours and client counter-change talk; MI-consistent therapist behaviours and client ambivalence; and therapist-other speech preceding client-other speech. Overall, the predictive relationships of therapist-client transitions in this investigation are in the same direction but stronger than those reported by Daeppen, Bertholet and Gaume (2010). Daeppen et al. (2010) investigated a sub-sample of approximately 330 hazardous drinkers randomised to 30 minutes of MI based treatment who presented to accident and emergency. These participants' level of alcohol abuse was possibly more severe than the UKATT participants'. Daeppen et al's sample was approximately six times the size of this thesis sample, therefore it is more likely that strong predictive relationships can be evidenced. The findings of this thesis research are modest when compared with Barnett et al. (2014). Barnett et al. found that, amongst participants receiving MI for drug use, change talk was 11 times more likely to follow therapists' positive reflections and counter-change talk was 18 times more likely to follow therapists' negative reflections. Again, Barnett et al. used a much larger sample than this study, 14,505 transitions taken from 223 sessions, compared with 785 transitions from 50 sessions in this project. Comparing the results of this research with both Daeppen et al. and Barnett et al's research, it suggests that a larger sample of UKATT participants in future research could increase the strength of the predictive relationships observed. However, it is unclear whether and how a larger sample might influence client ambivalence results, as this is the first instance such a category has been used.

4.1.1.1 Reliability: Investigator and independent researcher agreement on behaviour categories

Inter-rater reliability analysis revealed strong agreement between the investigator (LD) and the independent researcher (HC) when coding client and therapist behaviours. This suggests that, where statements are identified for observational coding, therapist and client behaviours are likely to be rated similarly if carried out by a different investigator. It also implies that similar results could be obtained on replication. There were rare instances of disagreement. It is likely that these were due the fact that the independent researcher had less contextual data from the recording than the investigator. Strong reliability is most likely to be due to the researchers' use of the MISCOPE and supplementary coding manual developed by the investigator. It may also be attributable to the reliability process of statements being clearly defined before coding. Clearly defining the statement meant the independent investigator did not need to extract the statement from the recording themselves; rather the independent investigator rated statements they were given. Rating predetermined statements was not a method used throughout the reliability process with the expert.

4.1.1.2 Reliability: Investigator and MI Expert agreement on the identification of CCT

For three of the five recordings the matching identification of CCT statements was assessed. Agreement was no more likely than by chance with this method. This identification method is similar to the process of testing the reliability of parsing speech (demarcating speech into thought units) because it requires extracting discrete statements from the flow of conversation. When reliability analysis for parsing has been undertaken in previous MI process research, agreement has been poor and the investigators excluded this process from their investigation (Moyers & Martin, 2006). It is therefore unsurprising that agreement for the third, fourth and fifth recording in this investigation was weak. The fact that both the

expert and the investigator noticed different CCT indicates that sustaining focused attention throughout a therapy session is challenging for researchers (even experts) in process research. It also implies that the investigator may have failed to identify CCT data in other recordings included in the investigation. In the current study it was preferable for the data to be taken from a range of clients, rather than yield all the CCT data from fewer individuals. The aim was not to identify all instances of CCT but to collect CCT from a diverse range of clients, therefore the poor agreement on the identification of CCT is not problematic per se. Importantly, once statements were considered using the MISCOPE and supplementary coding manuals there was complete agreement between the expert and the investigator. This shows that a standardised approach was necessary and significantly increased reliability. The marked discrepancy between identification of CCT in the context of a recording and discussion of whether a given statement is CCT supports the importance of using a standardised approach in behavioural analysis.

4.1.2 Variance and generalisability

High variance in the amount of counter-change talk was observed across clients, which is beneficial because analysing a range of people expressing counter-change talk increases the generalisability of the results. However, over one third of the transitions ($n=300$) were from four therapist-client dyads, and two of these involved the same therapist. This number of transitions from relatively few clients (4 out of 44) and therapists (3 out of 28) is disproportionate considering the sample size and these participants may have distorted the findings. Two possible reasons for the high levels of counter-change talk from this small subsample are therapist competence and clients' attitude to change. It is possible that the three therapists were less competent in MI skills than other therapists in this UKATT subsample. Their style of interaction could have increased reactance and therefore client counter-change talk (Karno et al., 2010; Miller, 2006a; 2006b). It is also possible that the four

clients were more oppositional (Dowd and Wallbrown, 1993) or less ready for change (Prochaska and Norcross, 2001), compared with other clients. This could be the case for these clients in general, or could be true for these clients only at the time of recording; if so the relatively high frequency of CCT could be independent of therapist competence.

Unfortunately, only speculative reasons for the high frequency of CCT identified for these few clients can be inferred without further evidence.

Despite the drawbacks inherent in collecting approximately one third of the counter-change talk from four of the fifty recordings, the inclusion of these recordings yielded valuable data for this study, which focusses on CCT and how it is managed.

4.1.3 Frequencies of therapist and client categories

Frequencies of therapist and client categories in this sample were extracted from sessions where therapists were responding to counter-change talk (CCT), therefore CCT was expected to be prevalent in the data and change talk (CT) was expected not to be as prevalent. The frequency analysis should therefore be considered within this context.

The data revealed that, following baseline CCT, MI-consistent (MICO) speech was the most commonly observed therapist category. MICO behaviours were the most commonly observed relative to all speech categories, including CCT, suggesting that therapists in this sub-sample of UKATT MET treatment were generally behaving in accordance with the MI model. This is consistent with alternative hypothesis 2 which predicted the most common therapist speech to be MICO. The fact that therapists were MI-consistent, despite the relatively high frequency of CCT and relatively low frequency of CT, is encouraging because it shows adherence to the MI model.

The probability of therapist MI-inconsistent (MIIN) behaviours occurring in the context of all speech was .13, meaning that there was a 13% likelihood that therapists would

respond to CCT in a manner deemed unhelpful by MI authors. MIIN was not the least common therapist behaviour, which contradicts hypothesis 2. Since MIIN therapist behaviours were relatively low in the presence of CCT, it is possible to infer that clients had little influence on therapist behaviour in this investigation, however, simply analysing overall frequencies without transitional probabilities cannot support this inference.

Therapist Other (TOther) was the least common therapist category. This contradicts hypothesis 2 which stated that TOther and MICO would be the most frequent therapist behaviours after baseline CCT. This hypothesis was also based on a possibly incorrect assumption that ‘rolling with resistance’ would involve the therapist speaking about something other than behaviour change immediately after CCT. This is an acceptable inference given that the essence of rolling with resistance is not to oppose resistance but “coming alongside” the client (Miller & Moyers, 2008, p10). An alternative and more plausible inference would be that MICO behaviours were the most likely behaviours following CCT because CCT applies to behaviours where the client is speaking against changing their behaviour. A trained therapist changing the subject when a client is already discussing the target behaviour is perhaps unlikely. Also MI authors describe several methods of rolling with resistance that are variations of reflections (e.g. simple, amplified and double-sided reflections) and endorse therapists to respond with MI principles such as enhancing autonomy (Miller & Moyers, 2008).

The relatively low frequency of TOther behaviour may be due to purposeful sampling of the data around CCT, where conversations were expected to be more focused on the target behaviour. If entire therapy sessions were coded and categorised it is possible that the TOther frequencies and transitional probabilities would resemble that of existing research. Low frequencies of TOther could be indicative of UKATT therapists not wasting words, choosing MI-consistent behaviours instead of neutral language, and being appropriately directive by

continuing the conversation about drinking behaviour. Overall, this indicates that therapists in this study have behaved strategically, rather than simply following client behaviour.

The relative frequency of all three therapist categories is important because the therapists were observed under conditions where CCT is present. Counter-change talk was the most common client category as expected, where 18% of all speech and therefore 36% of client speech was CCT. Change talk (CT) was the least common (6% of all speech and therefore 12% of client speech). Results from existing literature about frequency of change and counter-change talk are mixed. Some results reveal that where MICO behaviours are relatively high, change talk is also high and CCT is relatively low (Apodaca et al., 2014). A meta-analysis of addictive behaviours by Magill et al. (2014) found that counter-change talk frequencies are not significantly lower than change talk in the presence of MIIN behaviours. However, no other study so far focuses solely on CCT extracted from recordings, making comparisons with this study less meaningful. The frequency of therapists' responses are useful in indicating a general trend in the 28 therapists' behaviour under certain conditions. Specific analysis of transitions from one behaviour to the next, enables a more accurate inference about which client behaviours follow a given therapist behaviour.

4.1.4 Transitional probabilities of therapist and client speech

The most likely transition from therapist to client speech was MI-consistent (MICO) to change talk (CT), the second most likely was Therapist-Other (TOther) to Client-Other (CLOther), and the third most likely was MI-inconsistent (MIIN) therapist behaviour to counter-change talk (CCT). These findings are consistent with hypotheses 1a, 1b and 1c and with existing process research suggesting that therapists' adherence to the MI model is associated with clients speaking more about change and speaking less against change (Amrhein et al., 2003; Baer et al., 2008; Barnett et al., 2014; Gaume et al., 2008; Glynn &

Moyers, 2010; Magill et al, 2014; Martin et al., 2011; Moyers et al., 2009; Vader et al., 2010). The strong relationship between MICO and CT is pertinent to this research as it suggests that, within the context of a general pattern of conversation, therapists can diffuse resistance with specific MI behaviours. The general pattern of interactions is key because the transitional probabilities show associations between a group of therapist and client behaviours, not only between single utterances as other research has evidenced (Gaume et al., 2008; Glynn & Moyers, 2010; Moyers & Martin, 2006). The coding and categorisation method reveals that the specific MI behaviours include: open questions; selective reflections of ambivalence (developing discrepancy); selective reflection of change talk; affirmation; and statements that enhance the client's autonomy. It is these behaviours that are more likely to be followed by client CT. The results show that therapists were able to use these linguistic techniques in the presence of client CCT. The results also support the MI authors' theory (Miller & Rollnick, 2013) and research (Miller, 1978; Miller & Baca, 1983; Miller Benefield & Tonigan, 1993) and subsequent process research (Barnett et al., 2014; Gaume et al., 2008; Glynn & Moyers, 2010; Moyers & Martin, 2006) evidencing that, the client is more likely to respond with further CCT when therapists respond to client CCT by reflecting their lack of commitment, advising, confronting, and warning.

TOther followed by CLOther was the second strongest predictive association in the results, despite the fact that TOther had the lowest relative frequency than any other behaviour category. This indicates that when the therapist talked about topics other than the target behaviour, the client was very likely to do the same. This finding is similar to existing research (Barnett et al., 2014; Gaume et al., 2008; Moyers & Martin, 2006) and provides further support for Moyers et al's (2009) more general observation that the direction of the therapists' reflections would influence client speech about a similar topic. Speech unrelated to drinking behaviour would encourage more of the same; therefore, therapists should reflect

more of what they want to hear. Barnett et al. (2014) found that client other speech was likely to be followed by therapist other speech. It is possible that the same could be the case in this sample.

Hypothesis 1a predicted that ambivalence (AMBIV) would be more likely to follow MIIN than by chance. Hypothesis 1a was not supported with ambivalence data, which showed that AMBIV was significantly less likely to follow MIIN than by chance, and two times more likely to follow MICO behaviours. This unsupported prediction could be explained by the categorisation criteria for this category. The category AMBIV was applied to several coded behaviours where both CT and CCT were present alongside each other. This means that AMBIV could contain a group of behaviours where a majority were CT and only one was CCT. Previous research and the results of this investigation suggests that CT is less likely to follow MIIN and more likely to follow MICO behaviours. The finding that MIIN was significantly less likely to be followed by AMBIV may indicate that the majority of AMBIV categories contained more CT than CCT. The relatively low frequency of CT in the sample could imply that when clients vocalise CT, following therapist MICO behaviours, CCT remains. Yet CT may have also increased resulting in expressions of ambivalence. The proportion of CT and CCT in the ambivalence category was not investigated and therefore the above theories cannot be evidenced. The use of ambivalence categories for the third part of the conversational chain (client speech following therapist speech) used different criteria than the initial baseline CCT. This means that results should be interpreted cautiously. The limitations of this method of categorisation are discussed in section 4.2.6.1.

This investigation involved analysing whether the therapists' responses made a difference to client CCT. The findings show that strong to modest predictive relationships exist between the three therapist categories and changes in client CCT. This suggests that MI therapist behaviour does diffuse client counter-change talk about drinking behaviour. The

amount of MIIN, MICO and TOther therapist speech present following baseline CCT cannot be interpreted as an “effect” of the client behaviour on therapist behaviour because odds ratios were not calculated for these transitions, only transitions between therapist response to CCT and subsequent client behaviour. However, the overall frequencies of therapist behaviours are useful descriptive data to indicate overall adherence to the MI model.

4.1.5. Importance of this research in the context of the existing evidence base

This research has addressed a gap in process research evidence regarding how MI therapists manage counter-change talk. A focus on counter-change talk is relatively rare in MI literature as change talk is mainly investigated in terms of positive change outcomes when investigating intervention efficacy (Amrhein et al., 2003; Baer et al., 2008; Martin et al., 2011). Previous process research has either focused on change talk or taken a broader perspective across all types of therapist and client behaviour (Brown, 2014; Glynn & Moyers, 2010; Moyers et al., 2009). Additionally, with the exception of Barnett et al. (2014), no other research has investigated the transitions of a three-part chain of interactions. This research is also novel as it analyses the range of utterances spoken by each individual and aggregates these codes into categories that represent turns in the conversation. This approach to behaviour analysis is both unique and ecologically valid as it resembles therapeutic interactions. The use of categories as aggregated codes has not been documented in published research and prominent investigators in the field are unaware of such research (T. Moyers, personal communication March 30, 2015). The approach of this thesis allows for detailed in-session analysis whilst examining turns in conversation, rather than scrutinising individual statements. This is a beneficial approach for process research because it more closely resembles the general therapeutic manner than single statements uttered out of context. Therapists’ interpersonal skills are important in the therapeutic alliance, which is evidenced as particularly powerful (Lambert & Barley, 2001; Miller & Baca, 1983; Smith & Glass,

1977). Model-specific skills are difficult to tangibly evidence because separating them from therapeutic alliance is challenging (Miller & Moyers, 2015; Morgenstern, 2012; Ahn & Wampold, 2001; Wampold, 2005).

It is relatively rare to examine the impact of linguistic expression in the therapeutic interactions of psychological interventions, however, linguistic analysis in the field of MI is advancing. Since the development of the MI model (Miller, 1987; 1983) when the principles and theoretical foundations were reported, clinical trials (Miller, Benefield & Tonigan, 1993), including RCTs (Group Project MATCH Research, 1998; Haddock et al., 2003; UKATT Team, 2005) and meta-analyses (Burke, Arkowitz & Mechola, 2003; Hettema, Steele & Miller, 2005) have explored the effectiveness of MI compared with other approaches. Following this, process research focussed on the frequency of occurrence of certain utterances (Amrhein et al., 2003; Glynn & Moyers, 2009; Martin et al., 2011; Vader et al., 2010). It is only in more recent years that sequential analysis of therapist and client speech has been carried out, and MI-specific in-session processes have been evidenced as contributors of its effectiveness (Barnett et al., 2014; Daeppen et al., 2010; Gaume et al. 2008, Moyers et al., 2007; Moyers et al, 2009). This has largely taken place at the University of New Mexico, continuing the work of Miller, one of the founders of the MI approach. Some academics and clinicians contest the importance of investigating the ‘active ingredients’ of a therapeutic model, when meta-analyses have revealed that a significant proportion of the effectiveness of a therapy is due to the therapeutic relationship (Lambert & Barley, 2001; Messer & Wampold, 2002; Norcross & Lambert, 2011). Process research is useful because it looks at what elements of the intervention are making the change (Sminia, 2012) and this is a reasonable topic of investigation, even if one intervention is equally effective as another, because different interventions can be beneficial in different ways. The rationale for conducting sequential analysis research is based on evidenced associations between what

clients say about their intentions to change their behaviour and their behaviour outcome. The examination of whether MI is being practised as designed is something RCTs may not always address (Cartwright, 2007). More importantly, this research examines the counter-change talk, which is relevant, since effectively responding to resistance to change was the main motivation for the development of MI (Miller, 1976;1978; Miller & Baca, 1983). This study explores how ‘rolling with resistance’ is practically implemented, and whether and how much it may be responsible for reducing an attitude of resistance.

4.1.6 Investigator and MI expert agreement

When all 137 identified statements were discussed, with reference to the MI-SCOPE and supplementary coding manuals, the investigator and the MI expert obtained 100% agreement that all were CCT. This is a valuable reliability outcome and highlights the importance of using standardisation in behaviour ratings, which can increase clarity, consistency and prevent rater drift (Kimberlain & Winterstein, 2008).

The aim of the MI expert and investigator independently identifying CCT was to select unambiguous statements that an MI therapist would be expected to notice. The agreement between the MI expert’s and the investigator’s independent identification of CCT was no different than would be expected by chance. The process of identifying CCT statements revealed that sustained attention when listening to these recordings was likely to be compromised for both the investigator and the MI expert. This implies that more CCT was present in the recordings than the investigator identified. Consequently it is possible more could have been collected for analysis.

Although published research reports reliability ratings for coding behaviours, only Moyers et al. (2009) report consistency of raters identifying the speech behaviours in the first instance. The reliability explained in Moyers et al’s research involved four transcripts being

double rated, where utterances (thought units) are demarcated. This approach is distinct from the blind identification of specific statements method of reliability used in this research, making comparisons difficult between existing research and the type of reliability in this project.

4.1.7 Investigator and independent researcher agreement

There was strong agreement ($k = .674$ and $.697$, $p=0.00$) between the investigator (LD) and the independent researcher (HC) ratings of categorised therapist and client behaviours, following baseline CCT. The level of agreement of coded behaviour in this research is graded as “excellent” according to Fleiss’s (1981) guidelines and “substantial” according to Landis and Koch (1977) guidelines. Variable (in some cases “poor”) to high ($k < .6$) levels of agreement are documented in process research (Gaume, 2008; Moyers & Martin, 2006; Moyers et al., 2009). In these studies, high levels of reliability occurred when weekly reliability meetings or supervisory sessions took place with the chief investigator facilitated consistent rating across researchers.

There was strong agreement between the investigator and independent researcher in the categorisation of therapist and client behaviours, but where there were instances of disagreement it was considered beneficial to examine these further. Disagreement between MICO and MIIN and between CT and CCT were examined further. The most frequent disagreement rating in client speech was in relation to the independent researcher using reasons against change, (a form of counter-change talk) when the investigator used different subtypes of change talk. This may have been due to the independent researcher’s lack of clarity about this specific behaviour code. Other instances of disagreement may have been due to the fact that the independent researcher was less familiar with the supplementary coding manual, which was written by the investigator. Overall, the independent researcher

coded more instances of MI-inconsistent behaviour than the investigator, and more instances of client behaviour as counter-change talk than the investigator. This revealed that even when consistency ratings are substantial, subjective biases are inevitable.

Reliability checks were performed on 20% of the data collected. Overall, the agreement between the investigator and the MI expert and independent researcher was good, considering the ambiguity of speech.

4.2 Method appraisal

4.2.1 Design considerations

This process research involved cross-sectional sequential analysis of specific speech sequences. Existing process research calculated transitional probabilities between specific therapist and client coded behaviours throughout MI therapy sessions. This research is unique because data collection involved extracting only sequences where counter-change talk was present, making sequences isolated events. The specific focus on speech following CCT in this investigation was chosen for feasibility of data collection for one investigator within a specified time-frame, and to find a clear and measureable outcome, increasing the likelihood of meaningful results. The focus of this investigation restricted further examination of clients' influence on the therapists, because without data from the entire session, it would not be possible to calculate the probability of a given therapists behaviour by chance. Although, analysing client's influence on the therapist was not part of the research question, this could have been a valuable contribution to the evidence base. Barnett et al. (2012) is the only other investigation that focuses on the three-part interaction (client-therapist-client behaviours) whilst analysing transitions between therapist and clients in both directions.

In addition, extracting sequences may have excluded meaningful information about why counter-change talk and the subsequent behaviour were spoken at all, since the

sequential behaviours analysed were potentially loaded with accumulated emotions from earlier exchanges that were not captured in the data collection. This makes it difficult to infer associated relationships between observations. Contemporary process research is also limited in this regard, since only therapist-client transitions are pooled for analysis, the order of the utterances in each MI session cannot be preserved.

Another difference between this and existing MI process research is that the latter examine the transitions between single utterances, but, in this research several utterances were combined (aggregated) to form a set of speech behaviours described by a particular category. Discussion of the benefits and limitations are described in more detail in 4.2.5.

Aggregating coded utterances into categories enabled an examination of interactions in MI conversations and went some way to representing the complex interactions during therapy. This is an extension of previous process research that has considered only transitions between single coded utterances. That said, the current research could only investigate associations between isolated, aggregated categories, extracting meaning from a series of utterances in the context of a therapeutic session. Although each utterance is coded, the aggregated categories do not give focus to each utterance in turn. This approach may be more ecologically valid for understating client-therapist interactions, because clients do not necessarily remember exact words, rather they gain an impression of the general features of their experience, rather than specific MI therapist techniques (Jones, Latchford & Tober, 2015; Orford et al., 2006; 2009).

This investigation involved secondary analysis of data the RCT UKATT, which compared the overall effectiveness of different interventions for problem drinking; including MET (motivational enhancement therapy). The current project investigates a more specific question about the therapists' influence on the client using close inspection of language. The data was not collected with the same objectives as this research project, yet there were

benefits to using this RCT data. The RCT gained a large sample across several geographical sites therefore the volume of data available was much greater than one investigator alone could gain. The content and format of the data was appropriate for the research question in that trained MET therapists were engaging participants who would normally be seeking treatment in the NHS or voluntary sector community services.

The investigation used a cross-sectional design which is appropriate for the examination of spontaneous in-session interactions. However, cross-sectional analysis limits the conclusions from findings somewhat, in that only associations between one variable and another can be inferred due to an absence of experimental intervention. The consequent implication for this research is that it is not possible to draw conclusions about the therapist's behaviour directly impacting on the client's. A superior design would involve a combination of in-session analysis alongside sessional and final outcome measures where causal relationships could be investigated (Greenberg, 1986; Daeppen et al., 2010; Moyers et al., 2009). Alternatively, experimental manipulation within therapy sessions, alternating therapists' responses to counter-change talk with either MI-consistent or MI-inconsistent responses, would generate valuable evidence to complement existing research on change talk by Glynn and Moyers (2009). Although, the purposeful use of an MI-inconsistent therapeutic style could be deemed unethical.

This research added to recent process research using quantitative analysis. Qualitative study designs were initially considered and dismissed as feasible alternatives. Alternative methods included thematic and discourse analysis of speech present in the recordings, and participant interviews using a consensual qualitative approach (Braun & Clarke, 2006; Brown & Yule, 1983; Hill et al., 2005). A qualitative approach was considered because such methods could provide an in-depth, rich illustration of the contextual interactive process of resistance (Blommaert & Bulcaen, 2000; Potter & Wetherell, 1994). A qualitative approach

could gain insight into the subtleties of how in-session resistance to change can develop and be diffused. Several limitations to qualitative methods were also identified. In-session qualitative research may have led to additional subjective bias (Ezzy, 2013) therefore measuring observable behaviours with a standardised manual was considered to be preferable. Qualitative research would have also restricted the number of participants due to the labour intensive analysis process, reducing the generalisability of the results. Participant interviews using a consensual qualitative approach, (an approach endorsed in the field of qualitative analysis to enhance reliability) would require a multi-stage, in-depth examination of the participants' personal experiences (Hill et al., 2005) which was not feasible for this study. The therapy recordings are 12-15 years old and former UKATT participants would not be easily contactable to participate in interviews with the investigator.

4.2.2 Sampling considerations

The participants in this study are appropriate for MI process research because they had taken part in the UK Alcohol Treatment Trial (UKATT). UKATT was a multi-centre RCT for people seeking treatment for heavy drinking and who would normally receive this support within the NHS or a voluntary sector addiction treatment centre. MI was originally developed as a treatment for problem drinkers (Miller 1878: 1983; Miller & Baca, 1983; Miller et al., 1993). UKATT participant levels of drinking were sufficient to warrant investigation, therefore the sample is ecologically valid and findings are generalisable to a wider subset of the UK clinical population. Those included in this investigation were participants that had been randomised to receive a manualised MI-based therapy called Motivational Enhancement therapy (MET) (Tober et al., 2002). By agreeing to take part and attending three sessions of an MI-based therapy called Motivational Enhancement therapy (MET), the participants were already expressing some interest and possible commitment to change. This has the potential to bias results as they may engage in less change talk than

others not choosing to take part. However, the frequency of counter-change talk was not of primary concern in this study, rather the focus was on what followed counter-change talk. There was also evidence from one client in this study that they were required to seek treatment from employers, friends and relatives, and vocalised a reluctance to be there. This evidence indicates that the sample may have included individuals who were less ambivalent and more against change, possibly in the precontemplation stage (Prochaska and Norcross, 2001), making them more representative of problem drinkers. Circumstances of engagement would, therefore, be similar to participants seeking treatment in the NHS and voluntary sector community services, where clients must show some interest in participating in a therapeutic conversation.

The therapists included in this research were already employed at the UKATT sites either in the NHS or voluntary sector organisations. Following a screening procedure to check that therapists could utilise the basic skills necessary for both MI and the alternative intervention used in UKATT social and behavioural network therapy (SBNT), therapists were randomly allocated to provide one of these two interventions. Three day preliminary training was provided by the Leeds Addiction Unit. The MET therapists included in UKATT (of which a subsample was used in this research project) were those that showed competence in MI skills evidenced by two video-recorded sessions. MET therapists received fortnightly supervision throughout the training period and three-weekly supervision throughout the duration of the trial. This level of training and supervision given to therapists enhanced MET adherence levels (Tober et al., 2005) which supports the position that this process research is measuring the intervention it claims to measure. The fact that UKATT therapists were randomly assigned to deliver either therapeutic intervention, mitigated against treatment effects that could be caused by therapist characteristics or therapists' allegiance to the model (Carroll et al., 1994; Leykin & DeRubeis, 2009). Also, the UKATT therapists were recruited

from their work location and were representative of a range of professional backgrounds from two English and one Welsh site, meaning that the subsample in this research is likely to include an ecologically valid therapist sample, representative of UK addiction counsellors (Tober et al., 2005).

To conclude, clients and therapist in this investigation are appropriate for the research question and generated data that are likely to be generalizable to the clinical population.

Aside from the implications of the generalisability of the sample, the sampling method has implications for the variability in counter-change talk across clients, and the method of analysis. The amount of counter-change talk spoken will vary across sessions and clients accessing support in alcohol treatment centres. The current sample is reflective of this in that, relatively large amounts of counter-change talk data were obtained from relatively few clients. The sampling method entailed a combination of random identification of recordings followed by a screening procedure, which involved purposeful sampling to include recordings where there was counter-change talk. This was the most efficient and appropriate sampling method for the investigator, however it had implications for interpreting the results when using the chosen method of analysis, in part because of the design of UKATT. Participants (clients) in UKATT were allocated to receive MET sessions which varied in structure, with different therapists who varied in competence, situated in 6 different sites in three different areas in the UK. For this investigation the data from each client session was pooled for transitional probability analysis using a software package designed specifically for sequential behaviour analysis called GSEQ 5.1 (Bakeman & Quera, 2011). Using the same analysis software enabled comparison of results with existing research (Barnett et al., 2014; Brown, 2014; Moyers & Martin, 2006). The pooling of data means that the varying levels of client contributions of counter-change affected the outcome and clients with greater resistance are overrepresented (38% of the sample were from 4 therapist-client

dyads, two involved the same therapist). Since higher levels of resistance are harder to manage (Beutler, Moleiro & Talebi, 2002) the results were more likely to reflect no change in counter-change talk following a therapist response. Despite this, strong predictive associations consistent with the hypotheses were found in this data. The findings lend support to the effectiveness of MI therapist techniques.

4.2.2.1 Alternative analysis plan

The ideal statistical analysis procedure for this investigation would have been Multilevel Modelling or MLM (Snijders, 2011). MLM is suitable for data organised at more than one level and involves nesting data by variables. MLM can control for variance in CCT frequency across clients, therapist competence, MET session number and UKATT site so that transitional probability results are not dependent on these variables. MLM was not used so findings could be compared with other sequential analysis research (Barnett et al., 2014; Brown, 2014; Moyers & Martin, 2007), however, this study would benefit from using MLM to analyse the data in future. It was not feasible to include MLM in this current thesis.

4.2.3 Observational method

Data collection involved observations of audio-recorded interactions. When investigating client's attitudes about change, observational methods using standardised manuals can provide more objective interpretations of behaviour relating to these attitudes, than qualitative research (Ezzy, 2013; Hartmann & Wood, 1990). This observational method of measurement and analysis involved the investigator witnessing meaningful, raw, qualitative data within the context in which it occurred. Such an approach can reveal implicit client and therapist attitudes, increasing the validity of the identification and coding of these behaviours as far as possible. Observations of in-session behaviours are preferable to using participant reports, which gain selective, explicit reports of participant attitudes about change. Explicit reports

may be discrepant with participants' implicit attitudes and internal responses (Dickson, Gately, and Field, 2013; Wiers and de Jong, 2006). Observing in-session behaviour is valuable because it enables the investigation of how the therapeutic conversation unfolds, where individuals' behaviours can be examined as spontaneous indicators of implicit attitudes, which are complex and transient. Observation in process research enables the examination of individuals' "...proclivities and untutored repertoire" (Bakeman & Quera, 2011, p6).

The benefits of reliable observational methods of data collection are also accompanied by some limitations. Observed behaviour may also be inconsistent with clients' attitudes, since in-session speech is only an indirect measure of clients' attitudes to change (Orford, 2008). Language (content of speech) and vocal cues (tone of voice) were the two forms of communication that received most attention in this observational method. Non-verbal behaviour is a powerful form of communication and excluding these cues from the analysis may have compromised the interpretation of meaning in the behaviours (Bylund & Makoul, 2005; Mehrabian, 1968; Payrató, 2009). Observation of language and vocal cues only, limits the interpretation of client resistance to counter-change talk, yet vocal cues are only part of this manner and are superseded by content of speech using the MI-SCOPE). Another restriction associated with analysing speech behaviour, and a problem faced by talking therapy in general is that, what an individual says has a limited capacity to explain how they feel (Berg & de Shazer, 1993). Since the behavioural observations in this investigation centre around speech, a more detailed evaluation of the method of measurement will now follow.

4.2.4 Implications of coding and categorising utterances using a standardised manual

This project used a standardised coding manual to apply codes to speech, converting rich qualitative information into nominal data, before transforming the nominal codes into

numerical data for quantitative analysis. The coding and categorisation process used had strengths and limitations.

One advantage was that the standardised coding manual facilitated objective, reliable interpretation of speech. The standardised nature of coding MI therapist and client behaviours enabled comparison with the existing evidence base. Also, all speech behaviours were heard in the context in which they were spoken before codes were applied, which mitigated the loss of meaningful information.

There were three clear limitations to this method of measurement:

- 1) Speech behaviours may have been unnaturally segmented.
- 2) adhering to manualised instructions may have restricted what meaning could be attributed to an utterance (which code was applied). This could have resulted in inappropriate categorisation of speech.
- 3) Only relevant data was extracted from the recordings, meaning that, by the analysis stage, data was out of context

There was a somewhat unusual, albeit necessary, element to how the data was analysed. Paragraphs of speech were segmented into utterances (linguistic expressions of thought units) for coding. The irregularity of dividing utterances in a conversation is evidenced by: the low agreement found between the investigator and MI expert in this study when independently identifying counter-change talk statements; and the difficulty other researchers have experienced in segmenting this speech reliably across raters (Moyers & Martin, 2006).

Restricted interpretation of the data is a potential limitation for a few reasons. Instances of inaudible codes were excluded from the analysis and this may have affected how

the utterances were categorised. However, it is unlikely that this would have impacted the overall results due to the relative low frequency of inaudible codes.

Although the standardised coding process did include tone of voice, content of speech was the principle criterion because it enabled a more objective and therefore reliable interpretation (Martin et al., 2005). This means that an important factor in determining meaning from the data was minimised to uphold reliability, since the manner in which the words are spoken has an important impact on the hearer (Fischer & Moyers, 2014).

Some behaviours may not neatly fit the available codes and categories because language can be ambiguous. In the current research, the investigator interpreted meaning a broad range of verbal expressions and assigned codes to these (e.g. open question). Assigning one of a restricted number of available codes could be perceived as a reductionist approach to analysing behaviour. Open and closed questions and simple or complex reflections of counter-change talk could be either MI-consistent or MI-inconsistent depending on the context (discussed in detail in section 2.7.3). When using a manualised coding system a consistent rule should be applied to enhance reliability, limiting flexibility to code according to the context in which words were spoken. A consequence of this is that reliable categorisation could decrease validity because, in some instances, the code is not an accurate reflection of the words spoken, and therefore the MI therapeutic experience. Manualised coding can therefore be insensitive to the nuances of therapeutic communication.

A third limitation was that specific data was extracted for analysis, therefore the data was analysed out of context. Once the coded behaviour was grouped and categorised, and the therapist and client categories were paired together, the investigator was somewhat removed from the data and not aware of what speech behaviours were present; essentially detail is lost. However, this is a limitation common to other probability analysis studies and quantitative research more generally. One notable difference is that this research analysed groups of

utterances (categories) linked with one another, which led to the examination of overall patterns of behaviour. It did not involve examining one statement followed by another, the design of recent, relevant process research (Brown, 2014; Daeppen et al., 2010; Moyers et al., 2009). Strengths to conducting probability analysis in this way are discussed in 4.2.5.

In summary, it is possible that the observational linguistic analysis undertaken in this research is useful in investigating the effectiveness of the “active ingredients” of a therapeutic model, but could have resulted in losing some of the intended meanings of the client-therapist interactions.

4.2.5 Strengths and limitations of using aggregated codes to form categories

This research is innovative and provides valuable evidence to understand how MI techniques may bring about in-session attitude change. The investigation of realistic communication in conversation is fundamental to understanding what happens in a therapy session. Speech in a therapeutic dyad rarely consists of one utterance concisely expressed, followed by a single utterance from the respondent. Conversational speech involves the speaker generating chains of utterances which may make several statements, or one general point, in a few different ways. This is followed by one or more utterances from the respondent. Turn-taking in conversation varies depending on the speakers and what they are discussing. Existing research has looked at speech utterances as singular events and calculated the transitional probability of one utterance following another, e.g. complex reflection followed by change talk (Brown, 2014; Moyers et al., 2009). If only the immediate utterance is analysed, crucial data may be lost (e.g. subsequent counter-change talk). If relevant, contextual information is excluded it may be assumed that a positive impact was made when no change occurred. A client’s utterance immediately following a complex reflection may be neutral, yet after this utterance they may also use change talk. Analysis of

single utterances assumes that no other therapist utterance preceding the one analysed was associated with the subsequent client utterance.

The current method of aggregating codes to form categories incorporates evidence that the client is still ambivalent, whilst also evidencing this positive change. This method enhances sensitivity for the detection of change within the context of speech in a therapeutic conversation. It is unknown whether this method of categorisation is used elsewhere, as descriptions of the categorisation procedure in published research are generally brief, making comparisons with other research difficult. There is an absence of published research documenting this process, and personal communication with the chief investigator of several studies conducted in MI process research confirms the method of categorisation in this thesis research is novel (T. Moyers, personal communication March 30, 2015).

Aggregating speech codes into categories enabled the analysis of behaviour patterns that more accurately reflected the overall therapist-client interaction than previous MI process research. This is an advancement on existing process research.

4.2.6 Reflections on using the MI-SCOPE to code and categorise therapist speech

In MI there is a strong focus on the delivery of the therapist's reflections. Careful consideration was given to which types of reflections and questions were to be incorporated into either the MI-consistent (MICO) or MI-inconsistent (MIIN) categories. Although the MI-SCOPE authors Martin et al. (2005) made suggestions about the categorisations of codes, they did not give explicit instructions as to which code should fall into which category, leaving room for investigator's discretion. The decision made in this project regarding therapist reflections is consistent with MI theory (Bem, 1967; Miller & Rollnick, 2012). Bem (1967) and Miller and Rollnick, (2012) state that an individual's behaviour may be determined by what they hear themselves say therefore, the more change talk the client

speaks the more likely they are to change. This implies that therapists' simple and complex reflections of change talk would encourage further change talk. Empirical evidence for operant conditioning supports the theory that reinforcing a desired behaviour and ignoring the undesired behaviour leads to more of the desired response (Skinner, 1997). Therefore, it is also possible that therapist's absence of reinforcement of counter-change talk could reduce it. The results of this project and other process research in MI are consistent with this hypothesis (Amrhein et al., 2003; Vader et al., 2010).

4.2.6.1 The ambivalence category

The inclusion of ambivalence as a discrete category is novel but consistent with MI theory and research. Specifically it is consistent with the assertion that attitudes for and against change coexist and are common amongst problem drinkers (Miller & Rollnick, 2013; Engle & Arkowitz, 2006; 2008). The ambivalence category was suitable because any potential impact the therapist had on a client's response was a focus for the investigation, and because more than one client code can be present alongside another in the same category. This enabled a more sensitive representation of change since counter-change talk can be present alongside change talk, indicating opposing motivations (Engle & Arkowitz, 2006; 2008). For example, each category contained multiple utterances, and therefore, if only three client categories were used then it would be difficult to detect if the statements were ambivalent or pure counter-change talk.

The ambivalence category also has limitations. Specifically, in this thesis research the ambivalence category was not used at baseline. The utterance chain always began with counter-change talk because the criterion for investigation was simply the presence of it, to begin segmenting speech into utterances and coding subsequent behaviour. However counter-change talk at baseline (e.g. vocalisation of an absence of desire to change their drinking

behaviour) could be immediately followed by the client vocalising a reason to stop drinking (change talk). At baseline, change talk would not have been detected, therefore it is possible that, had the research identified aggregated baseline utterances, utterances could have been categorised as ambivalence. Therefore, aggregated categorisation of ambivalence utterances that follow the therapist response may make it appear as though the client has generated more change talk. That is, it may appear that the client has moved from counter-change talk to ambivalence when in fact there may have been no change. They may have even vocalised less change talk than at baseline. This means that interpreting the interaction CCT-MICO-AMBIV (counter-change talk followed by MI-consistent therapist response, followed by ambivalence) as the therapist having a positive impact on client attitude is unsubstantiated.

MI authors propose that the therapist is more able to display MI-consistent behaviours when change talk is heard alongside counter-change talk, because the therapist has some change talk to reflect (Miller & Rollnick, 2013). Considering the results, it is possible that all instances of ambivalence (AMBIV) that followed an MI-consistent (MICO) therapist response may have involved a baseline that was more like the AMBIV category than the CCT category. It is not possible to detect from the data what proportion of the speech at baseline was change talk (CT) or other forms of speech. Despite this limitation, the overall results show that MICO-CT transitions were more likely to occur than MICO-AMBIV (3.7 times compared with 2.4) suggesting that this limitation may not adversely affect the interpretation of the results. One approach to resolve this would be to include an ambivalence category at baseline. However, it was decided that this would complicate the analysis process. It was also preferable to assume that change talk may be present alongside counter-change talk because this has been commonly observed in the existing literature. Not including an ambivalence category at baseline means that a more conservative interpretation of the results is more appropriate, namely emphasising that MICO-CT transitions alone are the strongest indicators

of client in-session attitude change. A clear, replicable method of rating the proportion of change talk compared with counter-change talk would enhance the utility of the ambivalence category as an outcome measure of client speech.

The inclusion of the ambivalence category is an added feature that makes comparing this research to the existing evidence base difficult. The inclusion of the ambivalence category was necessary because of the novel research question. Answering the research question necessitated analysing patterns of multiple interactions, rather than the relationship between two specific behaviours. This type of sequential analysis within MI process research is still relatively new, and has been undertaken by few investigators. Some investigators observed the 5 therapist categories recommended by MI-SCOPE authors that focus on questions and reflections in their analysis (Barnett et al., 2014). Others have chosen to use three therapist categories (Daepfen et al, 2010; Glynn et al, 2012; Gaume et al, 2008; Moyers et al., 2009) similar to this investigation. Notably, no information is published about how investigators chose to categorise the coded behaviours.

The identified strengths and weaknesses of the project design and method of measurement have direct influence on the implication of the findings. The implications of the results will be considered, firstly within the context of sequential analysis research, and secondly, within the wider process research evidence base.

4.3 Implications of sequential analysis results

Sequential analysis research focuses on the interaction between clients and therapists. By examining momentary responses it can go further than frequency analysis, uncovering potential relationships between speech events (Russell & Trull, 1986). Sequential analysis in this thesis focuses on one aspect of therapist and client interactions, namely what impact therapists have on clients. Focusing on this one aspect allows a more detailed investigation of

momentary verbal exchanges that are directly relevant to the basic linguistic elements of MI. This question is important because therapists are clinicians with a duty of care. The results revealed that therapists may have some influence on the client's subsequent utterances, following initial counter-change talk, because the increases in change talk were greater than would be expected by chance. The analysis has therefore evidenced that, in a sample representative of the UK clinical population, therapists' use of linguistic techniques consistent with the MI model affect client's subsequent talk about their drinking behaviour. This change in client speech implies, but does not evidence, a change in attitude within the therapy session. The current research investigated what follows counter-change talk, one form of resistance, it has generated further evidence regarding one of the key principles of MI, i.e. 'rolling with resistance'. Rolling with resistance or meeting the client's speech with reflection not confrontation (Moyers & Rollnick, 2002) is a key principle of MI (Miler & Rollnick, 2013) and therefore a relevant topic of investigation.

A limitation of investigating specifically what follows counter-change talk is that results may create the impression that clients have little influence over therapists because client speech is the primary outcome, and is treated as conditional upon therapists' preceding utterances. However, therapists are not independent agents impervious to the influence of others (Karno et al., 2010), and clients may elicit certain responses from therapists. The absence of a bi-directional transitional probability analysis in this study means that it is not possible to assess whether, and to what extent, client speech influences (indirectly or directly) therapist behaviour. Bi-directional sequential analysis has recently been undertaken by Barnett et al. (2014) who found that therapists were nineteen times more likely than by chance to give negative reflections after client counter-change talk and ten times more likely than by chance to give positive reflections following client change talk. Barnett et al's (2014)

findings suggest that therapists are as influenced by client speech as clients are by therapist speech.

The effect of the client's speech on the therapist was not a focus for this investigation. Investigating the client's impact on therapist speech would entail the investigator coding all speech throughout each recording. To answer the current research question necessitated focusing on sections of speech containing counter-change talk. Coding all speech throughout the recording in order to calculate the probability that the therapist's behaviour is influenced by the client, rather than occurring by chance, would be beneficial for future research.

4.4 Implications of this research for the MI process research evidence base

This research investigated whether MI techniques could be evidenced as the effective agents of change evidenced in clients' speech about drinking, when analysing general patterns of behaviour interactions between therapists and clients. Process research can reveal how therapeutic principles are operationalised in-session and test whether these operationalised principles are feasible and effective for trained therapists. The analysis of therapeutic interactions is a complex area of study because verbal exchanges can be both powerful and transient, and because speech is only one aspect of communication. The MI therapist's general attitude and demeanour towards the client is highly valued in the MI model, as evidenced by the authors' focus on describing the MI spirit and principles (Miller and Rollnick, 2013). Miller and Rollnick describe linguistic techniques that convey the MI spirit and principles which aim to enhance the therapeutic alliance. There is substantial evidence that a strong therapeutic alliance (positive working relationship) between the client and therapist has a powerful influence on positive change, regardless of therapist technique (Hovarth & Symonds, 1991). Miller and Rose (2009) and Miller and Moyers (2015) argue that the relational and technical aspects of MI are intrinsically linked through language.

Considering the complexity of analysing communication and the inseparable link between conversation and therapeutic alliance, this research has made important advances in the field of MI in-session process research.

The question as to whether MI can be an effective agent of attitude change is also complex because change can occur at different stages. Process change research involves measuring in-session behaviours that may or may not lead to change (Greenberg, 1986). It was outside the scope of this thesis research to measure intermediate attitude change since no self-report measures were used (e.g. changes in drinking behaviour). The parameters of this investigation meant that only immediate outcomes (the extent to which therapist speech influences client speech) could be examined, according to categorised data. It is possible that observed associations between therapist and client behaviours may be due to unknown and uncontrolled variables that affect clients' attitudes and vocalisations about change, rather than being due to the variable analysed in the investigation, i.e. therapist speech (Woody, 2011). In order to overcome this limitation, Gynn and Moyers (2010) used experimental manipulation to investigate whether an MI intervention could generate more change talk than functional analysis. By alternating the therapists' approach with a client using an ABAB design, they found that MI was 13% more likely to elicit change talk from participants. Gynn and Moyer's study alone provides insufficient evidence to support claims that MI techniques are superior to alternative therapies in eliciting change talk, or effective in promoting behaviour change, therefore further research is needed in this area.

The limitations of focusing on in-session process research alone are highlighted by Greenberg (1986). Greenberg explains that immediate (in-session), intermediate (session outcome measures) and ultimate outcome measures (end of follow-up outcome measures e.g. daily alcohol intake) need to be analysed together to robustly assess behaviour change. Such research has been undertaken by Morgenstren et al. (2012) who investigated behaviour

change in 89 problem drinkers. They compared MI with “Spirit Only MI” (SOMI) meaning MI without the directive elements, and the control condition “Self Change” (SC) where no therapist intervention occurred. The results showed that in-session change talk (the immediate outcome) increased significantly more with MI in comparison with SOMI and SC. End of treatment behaviour change was similar across groups, however further analysis revealed that the MI group made behaviour changes more quickly than SOMI and SC, and that change talk mediated the relationship between the MI intervention and behaviour change in the week following the first MI session.

Morgenstren et al’s (2012) findings are consistent with existing research that supports the idea that there is little difference in the effectiveness of various forms of psychological therapy. MI is fundamentally a person-centred approach and the relational element to MI (e.g. affirm, emphasize control, permission seeking, support) alongside the use of open questions are behaviours similar to other forms of talking therapy (Miller & Rollnick, 2013; Rogers, 1951; 1957; Ryle & Kerr, 2003; Safran & Segal, 1996). Similarly, MI-inconsistent behaviours (advise, confront, direct, opinion, warn) are advised against in other forms of therapy (Kuyken, Padesky & Dudley, 2009; Ryle & Kerr, 2003). However, Morgenstren et al’s (2012) research goes further than looking only at an ultimate outcome of drinking behaviour and provides change process evidence demonstrating that the active ingredients of MI are more effective in enabling faster behaviour change than the relational aspects (e.g. empathic listening) of MI alone. Active ingredients are the specific, technical therapist strategies of a particular therapeutic model (e.g. developing discrepancy) (Miller & Rose, 2009). Thus Morgenstren et al’s (2012) research provides justification for investigating the specific, “active ingredients” of MI in this research, when MET in UKATT was found to be no more effective than its comparator interventions (UKATT Research Team, 2009). By including specific questions and reflections in the MICO category, this research also reduced

the possibility that only relational behaviours common to several therapeutic approaches were found to be associated with reductions in counter-change talk.

This thesis investigation analyses in-session behaviour with clients participating in three MET sessions. When comparing an individual's life experiences, their environmental context and long-term relationships alongside the therapist's contribution to change, the impact of psychological interventions is a very small part of the client's overall process of change (Apodaca et al., 2013, Orford, 2008). However, this thesis investigation was not designed to investigate behaviour change, but immediate changes in client speech in-session. It is process research, not change process research.

Existing change process research provides support for a causal link between increased change talk and reductions in addictive behaviours (Apodaca et al., 2014; Gaume et al., 2008; Vader et al., 2010), therefore the findings from this in-session process research project are supplementary to an existing evidence base. The narrower focus of this thesis research, although restrictive, is particularly relevant because it directly addresses the MI principle "rolling with resistance"; an approach that distinguishes MI from other therapeutic models.

The results of this project have contributed to the MI literature by conducting valuable secondary analysis of RCT data. To date there has been some sequential process research conducted using UKATT data (Brown, 2014) but nothing has been published in the UK as others have done in the USA (Barnett et al., 2014; Moyers & Martin, 2006; Moyers et al., 2009).

Considering this research in the context of psychological research more generally, MI is a therapeutic intervention which endorses a person-centred, directive approach for promoting change to addictive or unhelpful behaviours. Therefore, the findings in this process research are perhaps more relevant to: MI enthusiasts; clinicians providing therapy

using models more compatible with a person-centred approach; and individuals considering the appropriateness of MI for particular clients. Therapists using a different therapeutic approach may perceive MI-inconsistent behaviours as therapeutic. For instance, ISTDP (Intensive, Short-Term Dynamic Psychotherapy) therapists may view confrontation or warning as helpful therapist behaviours in drawing the client's attention to their defences against change (Davanloo, 1980; 1996). However, existing evidence from different therapeutic models also supports the MI authors' theory that some therapeutic techniques, such as structure and direction to the session, increase client resistance (Karno et al., 2010; Patterson and Forgatch, 1985; and Rains and Turner, 2007).

To conclude, the results of this investigation support the effectiveness of MI linguistic techniques to address counter-change talk and provide a valuable contribution to a growing evidence base that aims to understand what the therapist does to promote change more generally.

4.5 Future research

To build on the evidence gained from this investigation, one feasible improvement without further data collection would be to run a multi-level modelling analysis as described in section 4.2.2.1. With additional time and resources, further data collection to gain a larger number of recordings using the ambivalence category would increase the generalisability of the findings and may clarify any relationship between MI-inconsistent and MI-consistent behaviour and ambivalence. A larger sample would test the utility of the ambivalence category. If no clear relationships emerge it would indicate that the ambivalence category is not useful in this context. If the method of aggregating codes into categories was applied throughout the entire sessions, this could enable a bi-directional analysis of clients' potential impact on therapists' behaviour, revealing relationships between patterns of multiple

interactions. This would complement existing research where bi-directional analysis has occurred on specific behaviours.

Process research using UKATT data could be improved and extended by conducting further change process research by using the clients' ultimate outcome measures with the in-session, transitional analysis, similar to research by Apodaca and Longabaugh (2009). UKATT ultimate outcome measures included reports of alcohol consumption, alcohol dependence and alcohol related problems outcomes. A within-participant analysis could investigate potential relationships between in-session transitions from counter-change talk to change talk and the above final outcomes. Such change process analysis may suggest whether and to what extent the MI techniques may account for drinking behaviour change. In order to perform this change process investigation, a rigorous mediation analysis is advised, for example structural equation modelling or SEM analysis (Woody, 2011), where therapist behaviour would act as a potential mediator between client speech about change and client drinking outcome.

To build on process research outside the UKATT data, new investigations would benefit from including sessional alliance measures alongside in-session process analysis and final outcome measures of behaviour, to further explore mechanisms of change.

Taking a broader perspective on developments within MI process research, there is a need for improved standardised tools to measure behaviour reliably and holistically. An investigation to develop and test the reliability of standardised strength ratings for in-session behaviours could be worthwhile. Such an investigation would re-direct the current emphasis of MI process research from content and frequency of speech towards the vocal cues, potentially re-balancing the bias. This process could begin with a pilot study using multiple independent raters on the same selected MI sessions, focussing on change and counter-change talk.

Another method to improve process measures would be to consider rating more dimensions of resistance, thereby enhancing their validity. This could include the number of times the client or therapist interrupts the other. Although challenging, there is also a need for a standardised measures of non-verbal communication, which could be developed alongside, and validated with, measures that focus on language, since non-verbal communication is an important aspect of communication.

In summary, to build on the research findings of this project, further analysis on categorised behaviours using an ambivalence category would benefit the evidence base. In future it is advisable to investigate the bi-directional relationships between client and therapist behaviours in a larger sample and potentially link such in-session analysis with ultimate outcome measures to progress from process research to change process research.

5. Conclusion

This research investigated how MI therapists in a British randomised controlled trial responded to clients in the presence of counter-change talk. Data collection involved the aggregation of codes to form categories of client and therapist behaviours that represented multiple speech behaviours. This method differed to previous sequential analyses which, so far, have focused on transitions between specific behaviours. The focus of this thesis research was specifically around client counter-change talk, one form of resistance, because managing resistance to change is of central importance to the MI model. Strong predictive relationships following baseline counter-change talk were found between: MI-consistent (MICO) therapist behaviours and client change talk (CT); MI-inconsistent behaviours (MIIN) and counter-change talk (CCT); and between therapist-other (TOther) behaviours and client-other (CLOther) behaviours. The results add support for MI authors' claims that therapists' use of linguistic techniques, consistent with the MI model (not simply the MI spirit alone), affect clients' subsequent talk about their drinking behaviour. This project has evidenced similar

relationships to previous research but instead using patterns of multiple behaviours in sequence. It has therefore provided evidence that MI-consistent behaviours are beneficial for client attitude change within a wider context of therapist and client interactions. The design differed from previous research by using an ambivalence category to enable more sensitive detection of change in client speech. The fact that ambivalence was more likely to occur following therapist MICO behaviour suggests that increases in change talk occurred, although this cannot be verified from the outcome data.

This thesis has made important advances in the field of sequential in-session process research in MI. The focus on counter-change talk is particularly relevant to MI. The novel design progressed methods of detecting change in multiple interactions, whilst maintaining features that enable comparison with existing, relevant research. This investigation has evidenced technical aspects of the MI model as effective within sequences of behaviours that more accurately represent therapeutic interactions than previous research.

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Appendix A – UKATT Participant Consent Form

I agree to take part in the research comparing two forms of help for stopping or reducing drinking.

The research has been explained to me. I understand that I will be offered one of two forms of help and that I will be required to complete some further questionnaires during the therapy and to attend follow-up appointments. I also understand that, with my consent, someone (or more than one) who knows me well may be involved in meetings with the therapist.

I understand that any personal information I give in this research project will be kept strictly confidential. I understand that this information will be used only in combination with information from many other people so that I cannot be identified.

I understand that, with my consent, the member of my family or other person who knows me well whom I have suggested, may be contacted for further information of my progress after the end of the therapy. I understand that any information from this other individual will be kept strictly confidential. I also understand that any other contact names and addresses I have supplied will be used purely for establishing my whereabouts during the follow-up period and my involvement in this trial will not be revealed to them.

I agree to video recordings of my sessions being used for quality control and teaching purposes, and for future research. I understand that I will not be seen in the video but my voice will be heard on the recording. I understand that by putting a cross in the appropriate box below these tapes will be destroyed at the end of the trial.

I know that I can ask questions about the research now or at any stage, and that I can choose to withdraw from the research at any time without this affecting the quality of the help I receive.

I have been given a list of the names and telephone numbers of those responsible for this research, including the name of a manager to whom I should address any complaint or grievance that I might have.

I require that all video recordings of my session be destroyed at the end of the trial

Name.....

Assessors Name.....

Signature.....

Signature.....

Date.....

Appendix B – MI-SCOPE

**Motivational Interviewing Sequential Code for Observing Process
Exchanges (MI-SCOPE)
Coder's Manual**

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MI-SCOPE was developed to encode recorded and transcribed motivational interviewing interactions between a therapist and an individual client, with a particular focus on the sequential information contained in the exchange between the parties, for the purpose of investigating the relationship between theoretical constructs important to MI, therapy process more generally, and client outcome. MI-SCOPE adapts and combines two other successful coding systems, the MISC (Miller, 2000), and the Commitment Language Coding System developed by Amrhein (2000). The MI-SCOPE is a two-pass coding scheme, with one pass for parsing the transcript into utterances and a separate pass for coding the utterances.

Each session to be coded must be transcribed, and two copies of each transcript should be made: one to be kept archived for the length of time that a particular tape is under consideration (and from which additional copies may be made) and one for the parsing pass. An additional copy of the parsed transcript must be made for the coding pass. Parsers and coders mark directly on the transcript. After the parsing pass is complete, the coding is done in a separate pass through the tape. An entire session should be coded. Parsers and coders may stop the tape as often as needed to correctly code each utterance.

Although coders must use the transcripts, it is also important to listen to the session recording while coding. This is important not only because transcripts, even by professional transcriptionists, are often inaccurate, but also because much of the complexity of real conversational exchanges cannot be reflected in a transcript. For example, interruptions are very difficult to properly transcribe, and non-verbal vocal cues are simply not included in transcripts. Therefore, listening to the session should guide coders' interpretations as much as reading the transcript does.

Parsing

The basic unit of coding is the utterance. An *utterance* is a complete thought, or a thought unit (Gottman, Markman, & Notarius, 1977; Weiss, Hops, & Patterson, 1973). Two or more utterances are often run together without interruption. If two consecutive sentences merit different codes (e.g., a reflection followed by a question), they are by definition separate utterances. Utterances of client change talk are *always* parsed into separate utterances, even if the client emits consecutive utterances from the same change talk (or counter-change talk) category.

T: (Thank you for coming in.) (What brings you to see us today?)

C: (Well, I really want to quit drinking.) (There's nothing I want more than to quit this habit.)

A client utterance always terminates a therapist utterance, and the next therapist utterance becomes a new response. Utterances should be enclosed by the parser in parentheses to indicate exactly which words are considered a part of each utterance. In cases where both parties speak at the same time, the transcript may be parsed to form separate coherent utterances.

T: (I think it's fantastic that you

C: (Yeah it was

T: ...were able to do that.)

C: ...hard for me).

These utterances would be nonsensical and uncodeable if each terminated when the other speaker began, but in this way they can be parsed in such a way as to form coherent utterances. Each parsed utterance is numbered, generally in the space above the printed line. The utterance numbers are then used in the coding pass.

Because each utterance is defined by the available behavior codes, the persons selected for the role of parsers must be well-trained and experienced with language coding. The same individual may both parse and code on the same project, but generally should not code the transcripts they have parsed.

Coding

During the coding pass the recording may be stopped as often as necessary. The coder must decide in which of the main behavior categories each utterance belongs. In the margin of the transcript, the number of the utterance is written, followed by the abbreviation of the appropriate behavior code. Then proceed to the next utterance. The same utterance may never be given two different codes. If two consecutive utterances both merit the same code, (e.g., two questions in a row, on two different topics) then mark them as such. However, two sentences that are essentially the same idea are only one utterance. Use the same number sequence for both client and therapist.

Examples:

T: (Why haven't you quit smoking? Are you ever gonna quit?) single utterance.

T: (How long since your last drink?) (Do you feel ok?) two utterances

C: (I can't quit.) (I just can't do it.) (I don't have what it takes.) (I just cannot stop.) four utterances.

A *volley* is an uninterrupted utterance or sequence of utterances by one party, before another party speaks. The same code may be assigned multiple times within a volley, but any given utterance within a volley must be assigned only one code.

Incomplete sentences: Occasionally, one party begins a thought but does not complete it. Sometimes, it is clear from the partial utterance what was meant, in which case it should be coded. At other times, it is not clear what was meant, and in these cases the incomplete statement should be ignored.

Examples:

C: I don't know what would happen to me if I went back to drinking.

T: You know, I... (not coded, because meaning is not clear)

C: I mean, I might lose my job.

T: So you're really drinking to excess.

C: No, I don't think... (coded as negative commitment language)

T: I mean you're in the top two percent.

Therapist Behavior Codes

Advise (Adv). The therapist gives advice, makes a suggestion, or offers a solution or possible action. These will usually contain language that indicates that advice is being given: Should, Why don't you, Consider, Try, Suggest, Advise, You could, etc.

Differential: Code as *INFORM* if the utterance gives information but does not contain direct advice or suggestion. Do not infer that the therapist meant to advise by giving the information.

Differential: If the language is imperative, code as *DIRECT*. For example:

<i>You should avoid drinking when you feel down.</i>	<i>Advise</i>
<i>Don't drink when you feel down</i>	<i>Direct</i>

Differential: Code as *QUESTION* if the apparent advice is phrased in the form of a question.

<i>You could ask your friends not to bring drugs when they come over.</i>	<i>Advise</i>
---	---------------

<i>Could you ask your friends not to bring drugs when they come over?</i>	<i>Closed Question</i>
---	------------------------

<i>What could you ask your friends to do to help you stay clean?</i>	<i>Open Question</i>
--	----------------------

Affirm (Aff). The therapist says something positive or complimentary to the client. The following are examples of *AFFIRM* responses, but subclassification is not required.

Appreciation. The therapist comments favorably on a trait, attribute, or strength of the client. The reference is usually to a "stable, internal" characteristic of the client, something positive that refers to an aspect of the client that would endure across time or situations (smart, resourceful, patient, strong, etc.), although it may also be for effort ("I appreciate your willingness É" "I appreciate your getting here today.").

Reinforcement. These are general encouraging or "applause" statements that do not directly comment on a client's nature, and do not speak directly to self-efficacy. They tend to be short. "Good for you." "Well done!" "All right!" "Great job!" "Thank you!"

Differential: *Emphasize Control* takes precedence over *Affirm* when a therapist response could be interpreted as both. "I know you have the ability to do this" is certainly affirming, but would be coded as *Emphasize Control*.

Confront (Con). The therapist *directly* disagrees, argues, corrects, shames, blames, seeks to persuade, criticizes, judges, labels, moralizes, ridicules, or questions the client's honesty. These are the "roadblocks" that have a particular negative-parent quality, an uneven power relationship accompanied by disapproval or negativity. *Included here are utterances that have the form of questions or reflections, but through their content or emphatic voice tone clearly constitute a roadblock or confrontation.* Examples include:

Rhetorical	"Don't you think that..." "Isn't it possible that..." "Do you honestly believe that..."
------------	---

Leading	"What makes you think that you can get away with it?"
---------	---

Argumentative	"How can you tell me that É" "How could you É"
---------------	--

Accusatory	"You did <i>what</i> ?" "What were you <i>thinking</i> ?" "You expect me to believe É?"
------------	---

Disrespectful “You *actually* looked for a job this week” (sarcasm) “You *smoked a joint* this week” (disbelief, disapproval)

Re-emphasizing negative consequences that are already known by the client constitutes a confront, except in the context of a double-sided or summary reflection.

Subtle inference is not sufficient reason to code a therapist behavior as confront. If you are in doubt as to whether a behavior was a confront or some other code (i.e., it *might* be interpreted as a confront), do *not* code it as confront. If the response directs the client to do something, code it as Direct.

Direct (Dir). The therapist gives an order, command, direction. The language is imperative. “Don’t say that!” “Get out there and find a job.” Phrases with the effect of imperative tone include “You need to...” “I want you to É” “You have to...” “You must...” “You can’t...” and ”You should É”

The phrase “You should...” requires some judgment on the part of coders. Typically it will denote advice, but in certain contexts may be more properly considered directive. For example, in the context of a heated dispute between therapist and client, “You should go now” is clearly an order to leave. In general, the default code for “should” statements is Advise, unless the context makes clear that the intent of the therapist is to order the client to do something.

Emphasize Control (Econ). The therapist directly acknowledges or emphasizes the client's freedom of choice, autonomy, ability to decide, personal responsibility, etc. This may also be stated negatively, as in “No one else can make you change.” There is no tone of blaming or fault-finding. Statements supporting the client=s efficacy to accomplish something are also coded as Emphasize Control.

Feedback (FB). The therapist presents information that is personal to the client, in an objective and unbiased fashion. The information is presented without apparent attempt to persuade and the client is invited to draw his or her own conclusions from the data.

Differential: if the information is presented with substantial opinion or embellishment by the therapist it should receive a code of Advise, Confront or Opinion.

T: “This scale tells us that you are drinking about 72 standard drinks per week.” (Feedback)

C: “That’s not as much as a I thought!”

T: “Well, it does put you in the 99th percentile for men your age.” (Confront)

Filler (Fill). This is a code for the few responses not codeable elsewhere: pleasantries, etc. It should not be used often.

Self-Disclose (Sdis). This is information given to the client *about* the therapist. It includes disclosure of past events and experiences in the therapist's life, as well as expression of the therapist's present feelings or personal reaction to the client. Sometimes other categories, such as Support, Affirm, Confront, and Raise Concern are stated in self-disclosing language. These other categories take precedence over Sdis.

I care about what happens to you

I'm happy for you

Support

Support

As I listen to your story, I am feeling sad	Self-Disclose
I am feeling put off here, like I'm not getting through.	Self-Disclose
I am concerned that this is not a realistic plan.	Raise Concern
I'm worried that once you leave the hospital, you will be facing a lot more temptation	Raise Concern
I feel nervous as I hear you say this.	Self-Disclose
That doesn't fit with my own experience.	Self-Disclose
I don't think you're trying very hard.	Confront
I think you've done a great job.	Affirm

General Information (GI). The therapist provides straightforward information without added opinion or attempt to persuade the client to a particular point of view. Coders should not try to assess the truth value of the information. Information given about the experimental protocol is also coded here.

A beer is considered 1 standard drink.	General Info
Whiskey does not harm the liver.	General Info (may not be true, but is not stated as opinion)
Beer is much more harmful than whiskey.	Opinion.
We'll be meeting four times over the next eight weeks.	General Info

Permission seeking (Perm). The therapist requests permission from the client to speak. Permission seeking may be direct or indirect. For example, "May I share a concern I have about your plan?" would be direct permission seeking. In the volley, "This may or may not apply to you, but I think often it's best if people avoid the situations they find tempting," the first utterance "This may or may not make sense to you" is an indirect form of permission seeking. In effect, it gives the client permission to ignore or disregard the advise utterance which follows. **Note that when directly seeking permission, this code takes precedence over question.**

Question. The therapist asks a question in order to gather information, understand, or elicit the client's story. Generally these begin with a question marker word: Who, What, Why, When, How, Where, etc. The question may also be stated in imperative statement language:

Tell me about your family.	Open Question
Tell me more.	Open Question
Tell me how old you are.	Closed Question

QUESTION responses require subclassification as:

Closed Question (CQ). The question implies a short answer: Yes or no, a specific fact, a number, etc. This includes a "spoiled open question" where the therapist begins with an open question but then ends it by asking a closed question:

What do you want to do about your drug use? Open Question

What do you want to do about your drug use? Anything? Closed Question

Tell me about your drinking. Open Question

Tell me about your drinking. How old were you when you had your first drink? Closed Question

Closed questions may also be expressed in "multiple choice" format (as on a survey form), where the therapist suggests a series of answers from which the client is to choose one:

What county do you live in? Washington? Multnomah? Closed Question

What do you want to do about your drinking? Open Question

What do you want to do about your drinking: quit or cut down? Closed Question

Open Question (OQ). Questions that are not closed questions, which leave latitude for response. Remember that if the question can be answered by yes/no, it is a closed question.

How might you be able to do that? Open Question

Do you have any idea how you might be able to do that? Closed Question

Differential: Do not code clearly leading, rhetorical, accusatory, argumentative, sarcastic, or disrespectful "questions" here - code these as CONFRONT (see above). The effect of a CONFRONT disguised as a question is usually to reemphasize negative information that is already known to the client, rather than to gather new information.

Now remind me here - why is it again that you're on probation? Confront

Why should I trust you this time? Confront

Are you feeling angry with your mother? Closed Question

Open and closed questions require further sub-classification as questioning the negative aspects of the target behavior (i.e., negative consequences of continuing the behavior, positive consequences of changing the behavior, client dislikes regarding the behavior, etc.), the positive side of the target behavior (positive consequences of maintaining the behavior, negative consequences of changing it, positive feelings toward the behavior, etc.), or neither (target-behavior neutral). These should be specified in the coding as superscripts (- = target behavior negative, + = target behavior positive, 0 = target-behavior neutral) to the category. The language of the question must be unambiguous and overt. Do not attempt to infer the intent of the therapist. If there is doubt about what the therapist meant by the question, code it as neither. Questions about objective aspects of the target behavior, such as patterns of substance use, are neutral.

"What could you do to avoid tempting situations?" OQ⁻

"What consequences have you experienced as a result of alcohol?" OQ⁺

“Have you experienced any negative consequences?”	OQ ⁻
“What do you like about smoking crack?”	OQ ⁺
“What’s the up side to drinking for you?”	OQ ⁺
“How’d you like that rain this morning?”	OQ ⁰
“How often do you use cocaine?”	OQ ⁰
"What might stand in the way of your quitting?"	OQ ⁺

Ambiguous example:

Client: My mom cried when I told her I was drunk.

Therapist: How did that make you feel, when you saw her cry?

This question may be intended by the therapist to address negative consequences of the target behavior, but it is ambiguous. The therapist may simply want to explore the client’s feelings or reactions, or understand their point of view. When in doubt, code as neutral.

Questions are sometimes strung together in a series. In this case, if each question addresses a different topic, then each question is coded. If each question addresses the same topic, then the entire series of questions is coded as a single question, taking on the appropriate code for the last question.

Examples:

“What about your mother? What does she think of all this?”	OQ
“What about your family? And has your doctor discussed this with you?”	OQ, CQ
“Tell me about your drug use. Do you use marijuana?”	CQ
“Do you prefer uppers or downers? Tell me about your drug use.”	OQ
“How old are you? Do you want to lose weight? Where did you get that pen?”	CQ,CQ,CQ

Opinion (OP). The therapist provides information in a subjective fashion, often with the goal of supporting an argument being made or persuading the client to a point of view. Any time the therapist asserts something that cannot be given an objective truth value, code as opinion unless the statement fits one of the other categories. Note that other categories, such as support, affirm, or confront, usually also constitute opinions. In such cases, these other categories take precedence over Opinion.

“Drinking even one drink is too many.”	Opinion
“Alcoholics black out every time they drink.” (may or may not be true, but may be verified or falsified)	General Information
“More money should be spent on research.”	Opinion
“In my opinion, you are lying.”	Confront
“I appreciate your effort, ‘cause quitting is really hard.”	Affirm
“I think this information is really important.”	Opinion

“I think that must have been a very difficult choice.”	Support
“I think you’ve done a great job.”	Affirm
“What I think you need is to make new friends.”	Advise

Raise Concern (RC). The therapist points out a possible problem with a client's goal, plan, or intention. Raise Concern may include elements of possible negative consequences as long as these are expressed as the counselor’s own concern.

Differential: *ADVISE* is coded when the therapist is suggesting a form of action. *RAISING CONCERN* does not advise a course of action, but rather points to a potential problem or issue for the client's consideration.

I wonder what you might do, then, when you hit situations where Raise Concern, you have used drugs in the past, like when you feel bored.

I wonder if you might take a ride on your bike when you're feeling bored, instead of using. Advise

Differential: *SUPPORT* includes statements of compassion that can appear similar in language. The difference is that *RAISE CONCERN* points to a particular issue, problem, or risk.

<i>I'm concerned about you.</i>	Support
<i>I've been worried about you this week.</i>	Support
<i>I'm concerned that this may not work for you because..</i>	Raise Concern
<i>I'm worried that once you leave the hospital, you'll be facing much more temptation.</i>	Raise Concern

Differential. *QUESTION* takes precedence if a concern is raised in the form of a question.

<i>I'm concerned that you may have trouble keeping to your plan when you're around your old friends.</i>	Raise Concern
<i>How would you keep to your plan when you are around your old friends?</i>	Open Question
<i>Do you think you will be able to stick to your plan when you're around your old friends?</i>	Closed Question

Differential: *CONFRONT* involves direct disagreement, argument, persuasion, criticism, etc. *RAISE CONCERN* requires language that marks it as the therapist's concern (rather than Truth) or gives the client permission to disagree.

<i>Can't you see that this plan is going to fail the moment you walk out of this hospital?</i>	Confront
--	----------

There's no way that you are going to be able to stay sober without some additional support.

Confront

Reflect (SR and CR). The therapist makes a statement that reflects back content or meaning previously offered by the client, usually (but not always) in the client's immediately preceding utterance. Code as REFLECT whether the therapist's voice inflection is up or down at the end of the statement. Never code questions (Who, Why, What, etc.) as REFLECT. If a therapist response includes both a REFLECT and another codable response (such as a REFLECT followed by a QUESTION), code *both* behaviors. However, do not sub-divide a reflection, even if it includes a great deal of information. If a reflection is interrupted by another category of behavior, such as reflect-confront-reflect, then both reflections would be coded. REFLECT responses require subclassification.

Simple Reflection: These reflections add little meaning or emphasis to what the client is saying. They typically restate or rephrase what the client has already said. These reflections may be lengthy, but they do not change substantially the client's intended meaning. Here, therapist is following the client's statements relatively closely.

Complex Reflection: These reflections add significant meaning to what the client has said. This may be accomplished in a variety of ways, but the essential feature of a complex reflection is the therapist's injection of emphasis or content to make the client's statement more than it was. Here are some examples of how reflections can become complex:

Amplified Reflection, in which content offered by the client is exaggerated, increased in intensity, overstated, or otherwise reflected in a manner that amplifies it

Double-Sided Reflection, in which both sides of ambivalence are contained in a single reflective response.

Continuing the Paragraph, in which the therapist anticipates the *next* statement that has not yet been expressed by the client

Metaphor and Simile in reflection

Reflection of Feeling where the affect was not directly verbalized by the client before

Reframe in which the therapist suggests a different meaning for an experience expressed by the client, placing it in a new light. These generally have the quality of changing the emotional valence of meaning from negative to positive (e.g., reframing nagging as caring), or from positive to negative (reframing "being able to hold your liquor" as a risk factor).

Note that each of these types of reflection MAY be complex, and when coders come across them, they should carefully evaluate whether the statement adds meaning or emphasis to what the client has said. However, these types of reflection are not necessarily complex. For example, a double-sided reflection may be a repetition of what the client has said. In this case, it is still a simple reflection:

C: "I want to, but I don't want to."

T: "You want to change, but you don't want to." SR^{+/-}
 T: "You want to change, but the comfort of old habits also has a strong pull." CR^{+/-}

Reflections require further sub-classification as reflecting commitment to change (positive commitment), commitment to maintain the status quo (negative commitment), both or neither (see client behavior codes below for a discussion of change talk). Denote which type of reflection with a superscripted +, -, +/- or 0 as illustrated below.

Examples:

C: "I want to quit do badly, but I don't think I can do it."
 T: "So you're really concerned about whether you can do this or not." SR -
 T: "So you've got a really strong desire to quit drinking." SR +
 T: "So you have a strong desire to quit, but you're not sure you have the ability." SR +/-

Support (Sup). These are generally supportive, understanding comments that are not codeable as Affirm or Reflect. They have the quality of commenting on a situation, or of agreeing or siding with the client. "I can see what you mean." "That must have been difficult for you." "Sounds awful." Statements of compassion (not AFFIRM) for the client are also coded here as SUPPORT. (I'm concerned about you. I've been worried about you this week.) An "agreement with a twist" consists of a Support followed by a Reframe, and both would be coded.

Differential: Sometimes CONFRONT responses are masked in "I'm concerned" language. Again, CONFRONTS have the effect of reemphasizing negative information already known to the client, or placing negative connotations.

<i>I'm concerned that you haven't been showing up for your appointments.</i>	Confront
<i>I'm glad to see you. I was getting worried about you.</i>	Support
<i>I'm concerned that you are an alcoholic.</i>	Confront
<i>I'm concerned about you, given all these difficulties you've been having.</i>	Support

Structure (Str). These are comments made to explain what is going to happen in the session, to make a transition from one part of a session to another, to help the client anticipate what will happen next, etc. These include episodes in which the therapist mentions something that the client said in a previous session, when the purpose is to remind the client of that material, unless the purpose is also to confront the client.

In the last session you mentioned asking for a raise. How did that go? Structure,
 Followed by open question
That's not what you said last time. You said you were going to ask for a raise. Confront

Warn. The therapist provides a warning or threat, implying negative consequences that will follow unless the client takes certain action. It may be a threat that the therapist has the perceived power to carry out

(e.g., imposing negative consequences), or simply the prediction of a bad outcome if the client takes a certain course. WARN differs from ADVISE by the element of implied negative consequences.

Differential: If possible negative consequences are stated within the context of the therapist's own concern, code as Raise Concern.

You're going to relapse unless you get out of this relationship. Warn

You can't stay a non-smoker if you live with a smoker. Warn

I'm worried that it's going to be hard for you to stay sober while you're in this relationship. Raise Concern

Process Codes

In addition to the categories described above, each therapist utterance may be classified into one of three mutually exclusive categories of MI relevant content. These are simply plus, minus or neutral, and should be denoted by the letter M followed by a superscripted +, - or 0. Statements are coded as M+ if they serve any of the following purposes:

Express Empathy: These statements are typically reflections, but not all reflections express empathy. These reflections will have the quality of understanding the client's point of view, and not just repeating what the client has said.

C: "I can't believe I slipped. I was doing so well."

T: "This is really eating at you." CR+ M+

C: "This is really hard for me."

T: "Other people have gone through worse." Con M -

Develop discrepancy: These are statements that point out to the client a mismatch between values they have expressed and their behavior. They are typically reflections or questions.

C: "I just get out of control when I'm drunk."

T: "So you're really in a tight spot, because on the one hand you want to be a good example for your kids, but then you do things that you regret when you drink." OQ+ M+

C: "I really want to start saving money. I'm so tired of living paycheck to paycheck."

T: "Well if you'd quit smoking, that would save you \$100 a month." Con M -

Support self-efficacy: These statements serve to remind the client that the decision to change is theirs alone, or serve to support their ability to do so. Blaming the client is counted as a confront, not a support of self-efficacy.

"I'm not here to make you do anything. What you eat is up to you to decide." EC M+

"So you've been successful at cutting down in the past." CR+ M+

"You wrecked your car because you drank. You could have decided not to drive." Con M-

Roll with resistance: these statements follow client resistance (negative commitment language or other resistance behaviors, see client commitment language below). Theoretically, they serve to minimize the resistance. Specific strategies to roll with resistance from an MI perspective include reflective responses, reframing, shifting focus, emphasizing control, and coming alongside.

C: "I don't think it's any of your business or my wife's how much I drink." O -

T: "People shouldn't worry about you, you're ok." CR- M+

C: "Yeah, like my boss. I don't need to be sober to do my job." N-

T: "Sounds like people in your life are worried about you." CR+ M+

C: "My grandfather smoked until he was 92, and he was never sick." R-

T: "Look, he was probably just lucky. You're taking a big risk."	Con M-
C: "I just think I probably got good genes."	R-
T: "Would you want your kids taking that risk?"	Con M-

Client Behavior Codes

Client responses are classified into one of three mutually exclusive categories. Commitment language requires further subclassification as detailed below. Any therapist utterance (except a Facilitate) ends the client response, and the next client utterance is coded as a new response. The three categories are:

Ask. The client requests information, asks a question, seeks the therapist's advice or opinion. Question-like utterances such as "You know?" should be coded as Follow/Neutral, not Ask.

Follow/Neutral. The client's response follows along with the therapist, but does not deal with changing the target behavior. The statement is neither toward nor away from the direction of changing the target behavior.

Commitment Language: These are client statements that deal with changing (positive commitment) or maintaining (negative commitment) the target behavior. Each utterance should be placed into one of the following categories by marking it with the appropriate letter. Note the valence of the commitment (positive/ toward change or negative/away from change) with a + or – sign next to the letter. Only client speech that indicates or reflects the client's *current* state of mind is included as commitment language. Client language that is in the future tense is also included here. For client speech in the past tense, coders must make a judgment about whether the speech refers to something that is in the recent past (change talk) or something from the client's distant past that does not reflect their current state of mind (Follow/Neutral).

Client language may have the quality of relating a disposition of the client that is no longer relevant or true, or occurred in the distant past. For example, reports of past successes or failures in changing the target behavior will often occur, and will typically be coded as Follow/Neutral. They should be coded as commitment language *only if* they are used by the client to inform the therapist about the client's *current* intentions or state of mind.

Commitment: a statement that explicitly states or implies that the client is making a commitment to change or maintain the behavior.

"I am going to stop smoking tomorrow." (C +) "I'll never drive the speed limit!" (C D)

Commitments may also be indirect. Some markers for indirect commitment include the implicit or explicit use of "ifÉthen" sentence structures indicating that a commitment is in place to the extent that the client has determined how they will react should a likely threatening situation arise. In other words, the client is indicating that they have a plan in place to reach or maintain a goal. Also, remarks about how the client has rearranged their life, either in the present or past, to maintain or change a behavior, are also considered committing language:

“Back then I would do anything to get high.” (FN) “I stayed with him so I could get my drugs.” (C D)
 “I moved away to make things better.” (C +)

Another form of indirect commitment occurs when clients suggest alternatives to the target behavior.

"I guess I could drive home another way that doesn't pass by the bar." (C +) "Maybe I could wait 10 more minutes whenever I have a craving." (C +)

Desire: a statement that expresses a desire to alter or maintain the target behavior.

“Well, I want to quit doing drugs.” (D +)
 “I mean I want to but I don’t want to [quit].” (D +, D -)

Ability: a statement that assesses the client’s ability or capacity to alter the behavior. "Ability" here refers to capability, not to choice. Statements that use ability language, but through context appear to refer to a client's choice, are coded as commitment or other.

“I can do itÉthis is doable.” (A +)
 “If I could get rid of these drugs.” (A -)
 “...okay well, I can do some [drugs] myself.” (A D)
 “I need help.” (A D)
 “I must get help.” (A -)
 "I can stop overeating." (A +)
 "I can eat popcorn instead of candy." (C +)

Notice that the last statement may be taken to imply, "I have the ability to eat popcorn instead of candy" or "I have the choice of eating popcorn or candy, and it would be better if I chose popcorn." The latter interpretation is probably more reasonable in most contexts, and therefore refers to the person's choice. Few would doubt that most people are capable of eating popcorn, so it is unlikely that a person would comment on this capability. Such statements are frequent when clients suggest alternative behaviors for the target behavior.

Need: a statement about the client’s need to change (need for help is coded as ability) or need for the target behavior.

“I need to stop.” (N +)
 “I don’t need to turn to alcohol or anything.” (N -)
 “Cause I need it everyday.” (N -)
 “I really must get help if I’m going to stop.” (A+)

Reasons: statements about reasons for changing or maintaining the target behavior. Included here are statements about the client's emotional reaction to the target behavior.

"I'm killing myself."	(R +)
"It bothers me when I can't do things right."	(R +)
"I get relaxed. My problems go away."	(R -)
"I am terrified of being without a cigarette."	(R -)
"I just love the way beer makes me feel."	(R-)
"I hate the way cigarettes smell."	(R+)

It should be noted that desires, abilities and needs to change (or maintain) a behavior are also reasons. Consider these to be special classes of reason that get their own code. Reasons that are not statements of desire, ability or need are classified as reason.

Taking Steps: a statement that refers to a recent behavioral change made by the client. "Recent" requires some judgment on the part of coders, but refers to the quality of being current, not something the client did in the distant past. These latter statements will typically be coded as Follow/Neutral.

"Last week I cut down to only 2 cigarettes a day." (TS +)	"Last week I decided to try every type of beer at the bar." (TS -)
"When I was in college, I avoided parties so I wouldn't drink." (C +)	

NOTE: Each of the above categories of commitment language (C,D,A,R,N,TS) must have as their subject or object the target behavior. Statements of commitment, desire, ability, or need about related topics occasionally occur, in which the client appears to be expressing movement toward or away from change, but is not referring directly to the target behavior. In these cases, code as Other, as detailed below.

Example:

I sure want to get the most out of therapy. O+

This is clearly a statement of desire, but not a desire to change the target behavior, but rather a desire to fully participate in therapy for the target behavior. This is most likely a statement that expresses movement toward change, but does not refer directly to the behavior that might be changed.

Coders should take care in applying the definitions of desire, ability and need. Ability, for example, refers to the ability to engage in the target behavior or ability to stop engaging in the target behavior, not to any ability related to the target behavior. For example, consider the following statement:

I can't stop checking the door, 50 times a night, unless I drink, and then it gives me the ability to overcome the urge to check whether the door is locked

This is a reason to drink, NOT an ability statement. The statement includes ability language, but this language does not refer to the ability to drink (A-), inability to stop drinking (A-), an inability to drink (A+), or ability to stop drinking (A+). The ability statement refers to the ability to stop a compulsive behavior, but in reference to the target behavior (i.e., drinking), this is a reason to do so.

Here are examples concerning desire:

"I really want a beer right now." D-
 "I drink because I want to relax." R-

Here again, the second statement includes desire language, but the desire is not directly referring to the target behavior, but rather to an outcome of the target behavior. This outcome (relaxation) is a reason for engaging in the target behavior.

Other: In the complexity of real therapy sessions, clients often express ideas related to change that are ambiguous at best. Statements which are about changing (or maintaining) the target behavior, but are not well categorized as D,A,R,N, TS or C, are categorized as Other (O). These include indirect statements that appear to avoid the topic, and statements of open resistance or hostility. Also included are statements of problem recognition, i.e., the explicitly expressed knowledge that the target behavior is problematic in some way.

A few examples are given below, but in general we cannot anticipate the exact form that Other statements will take, as the category is intended for unanticipated statements. In general, these statements will have the quality of referring to the target behavior, and will carry information (often only in the context of the surrounding utterances) about whether the client is arguing for or against change, but they will not be easily categorized as commitment, desire, ability, reason, need or taking steps.

"I know it takes a lot of willpower to quit." O (valence depends on context)
 "I tell you, I sure don't want to be here in therapy." O -
 "People just need to mind their own business." O -
 "I've never experienced a single negative consequence
 of my drug use, ever." (O -)
 T: "On a scale from 1 to 10, 1 being not at all motivated,
 how motivated are you to quit?"
 C: "I'd say a 3." O -

Note that how "motivated" might refer to how much one desires to quit, the weight of reasons to quit, the need the client feels to quit, the commitment the client has to quitting, etc. It is unclear what type of commitment statement the client is making, but it is clear that the client is making a commitment statement of some kind)

T: "What could you have done differently?"

C: "Nothing. Look, I don't want to talk about it." O -

T: "Tell me about your drinking."

C: "It's absolutely none of your business." O -

MI-SCOPE Summary Scores

Because MI-SCOPE is a sequential coding system, it is rich in information regarding the dynamics of client-therapist interaction. However, statistical power is a concern with sequential analyses. Time series statistics, including stochastic models and ARIMA models, are not small sample statistics. For example, in order to compute reliable transition probabilities, the minimum expected cell frequency should be at least 3, preferably 5, given chance. For the full SCOPE, there are 46 categories. A transition matrix therefore would have 2116 cells, meaning that at least 6348 transitions would need to be observed

(assuming equal frequency between categories, which will rarely be the case), in order to meet the minimum expected frequency of 3 per cell in all cells.

No therapy session is likely to meet this requirement, and few studies are likely to have enough repeated observations of a single client to reliably calculate transitions among all the categories for single client statistics. The level of detail has been retained in the coding system for three reasons. First, it is still possible to use the distinct categories as frequency counts by collapsing across sequential order, and in that case the categories may still be informative. Secondly, pooling across subjects for fairly large samples still allows for general descriptive statements about individual categories, although these grouped statistics may not serve usefully as predictors. Finally, it is always possible to collapse across categories after coding, but once coded at a particular level of detail, it is not possible to expand to greater detail without recoding.

In general, though, it will be necessary to collapse across categories in order to perform sequential analyses. The following are recommendations for common research applications. Researchers should feel free to collapse the categories in any way that suits their particular needs and makes sense, keeping in mind the usual statistical concerns about parameter estimation (i.e., sequential model parameters are just as vulnerable to bias in exploratory analyses as the usual F and t tests).

Single subject categorization: Single 1-hour therapy sessions typically contain between 100-300 utterances, with a mean around 200. Given the noted guidelines about expected cell frequency, that allows for comfortable estimation of parameters for 8 categories. Since commitment language will usually be of primary interest, we recommend collapsing across Ask and FN, all positive commitment language, and all negative commitment language, to yield 3 categories of client speech. Then the following 5 categories of therapist speech may be constructed: Question, Reflect, MI+ (Affirm, emphasize control, permission seeking, support,), MI- (advise, confront, direct, opinion, warn), Other (all others).

MISC Summary Scores

Many of the summary scores from the MISC can also be extracted from SCOPE-coded sessions, although these scores *cannot* be used sequentially. These include:

Ratio of Reflections to Questions (R/Q)

R/Q is the ratio of the total number of Reflect responses to the total number of Questions asked.

Percent Open Questions (%OQ)

%OQ is a percentage in which the numerator is the number of Open Questions asked and the denominator is the total number of Questions asked (Open + Closed).

Percent Complex Reflections (%CR)

%CR is a ratio in which the numerator is the number complex reflections and the denominator is the total number of Reflections.

Percent MI-Consistent Responses (%MIC)

%MIC is a ratio in which the numerator is the number of MI+ responses, and the denominator is the total number of MI+ plus MI- responses.

Percent Client Change Talk (%CTT)

%CTT is a ratio in which the numerator is the number of all client commitment language (+) divided by the sum of client commitment language plus client negative commitment (-) responses.

Appendix A
Table of Abbreviations

Advise - Adv
Affirm - Aff
Confront - Con
Direct – Dir
Emphasize Control – Econ
Feedback – FB
Filler – Fill
Self-Disclosure – Sdis
General Information – GI
Permission Seeking – Perm
Closed Question – CQ
Open Question – OQ
Opinion – Op
Raise Concern – RC
Simple Reflection – SR
Complex Reflection – CR
Support – Sup
Structure – Str
Warn – Warn
Ask – Ask
Follow/Neutral – FN
Desire – D
Ability – A
Reason – R
Need – N
Taking Steps – TS
Commitment – C

Appendix B

MISCOPE numeric codes for data entry

Advise = 1

Affirm = 2

Confront = 3

Direct = 4

Emphasize Control = 5

Feedback = 7

Filler = 8

Inform = 9

Self-Disclosure = 10

General Info = 11

Permission seeking = 12

Questions: Closed Neutral 13

Positive 14

Negative 15

Open Neutral 16

Positive 17

Negative 18

Opinion = 19

Raise Concern = 20

Simple Reflection Change 21

Counter 22

Both 23

none 24

Complex Reflection Change 25

Counter 26

Both 27

none 28

Support = 29

Structure = 30

Warn = 31

Ask = 32

Follow = 33

Commitment = 34/41

Desire = 35/42

Ability = 36/43

Reason = 37/44

Need = 38/45

Taking Steps = 39/46

Other = 40/47

Appendix C: Behaviour codes, CACTI name and numeric value for data entry

Therapist Code Name	CACTI Button Name	Numerical Value
Advise	ADV	1
Affirm	AFF	2
Confront	CON	3
Direct	DIR	4
Emphasize Control	ECON	5
Feedback	FB	6
Filler	FIL	7
Self-Disclosure	SDIS	8
General Information	GI	9
Permission Seeking	PMS	10
Closed Question	CQ	11
Open Question	OQ	12
Opinion	OPN	13
Simple Reflection:		
Positive	SR+	14
Negative	SR-	15
Both Positive & Negative (including CT and CCT)	SR+/-	16
Neutral	SR0	17
Complex Reflection:		
Positive	CR+	18
Negative	CR-	19
Both Positive & Negative	CR+/-	20
Neutral	CR0	21
Support	SUP	22
Structure	STR	23

Summarise	SUM	24
Warn	WAR	25
Raise Concern*	RCN	26
Follow -Neutral	FN	27
Inaudible	INAU	998
Client Code Name	CACTI Button Name	Numerical Value
Commitment+	C+	30
Commitment -	C-	31
Commitment + -	C +/-	32
Desire +	D+	33
Desire -	D-	34
Ability +	A+	35
Ability -	A-	36
Reasons +	R+	37
Reasons -	R-	38
Need +	N+	39
Need -	N-	40
Taking Steps +	TS+	41
Taking Steps -	TS-	42
Ask/ Follow Neutral	AFN	43
Inaudible	INAUD	999

Appendix D: Supplementary coding manual

Adaptation & Refinement to MI-SCOPE	Justification
Therapist Speech	
<p>If the therapist speaks multiple utterances as part of a recap of the previous session or something said earlier in the same session, code as ‘Summarise’ (SUM).</p> <p>Summary is used for ‘overall’ statements where SR0/-/+ seems inappropriate. Summary can be considered a past tense structure e.g.</p> <p>“we talked about how much you have been drinking” = SUM</p> <p>“You said that...(specific reference)” = SR</p> <p>“So that’s how we left it.” = SUM</p> <p>Summary is superseded by simple and complex reflections.</p>	<p>It will inflate the overall MICO score if coded as SR because SR infers that a therapist is responding to what a client has just said and feels rather than something they discussed a few weeks ago.</p> <p>Some utterances will be coded as STR (structure) and Feedback (FB) since the second session can involve a recap on the results shared at session 1 as directed by the UKATT MET Manual.</p> <p>Summary may fit better under the general category of other (TOther) when all codes are collapsed because it is similar to ‘General information’ (GI).</p>
<p>SR- and CR- are used if the therapist reflects counter-change talk or behaviours that reflect the status quo. (see MI-SCOPE for distinctions between SR and CR).</p> <p>SR+ and CR+ are used if the therapist reflects change talk</p> <p>SR+ /- are rarely used since ambivalent statements generally are parsed as two statements. However, if both change and counter-change statements are reflected at the same time, use this code.</p>	
Both	
<p>Only code as CT or CCT if the client or therapist are speaking about the target behaviour (drinking) and no other substance use or other aspects related e.g. depression / anxiety / activities.</p>	
<p>If speech is inaudible so that the utterance cannot be fully understood, code as ‘INAU(D)’ for therapist and client.</p>	<p>Inaudible speech will be treated as missing data in the analysis.</p>
Client speech: CCT = actively resisting change and supporting the status quo.	
<p>Giving a report of continued problem drinking or reports of drinking in the recent past (e.g. since the last session or in the last 2 weeks) = TS-</p>	<p>Fits with MI-SCOPE & Amrhein’s (2003) definition of Commitment relating to recent past and near future.</p>

If TS timescale is ambiguous do not code as CCT	
Client cites reasons why drinking wasn't their fault = classified as CCT (R-)	Making excuses cites reasons against change
<p>GUILT</p> <p>Guilt can be a negative consequence (negative thoughts vocalised) of drinking and according to the MI-SCOPE manual it is a reason for change (R+)</p>	<p>This includes a client reporting a loved one's response to their drinking that leads them to feel guilty</p>
<p>Absence of guilt following TS- can be ambiguous. Firstly the client's goal for their drinking (abstinence or cutting down) is not always clear when randomly selecting recordings. Also, if clients drink when they decided to be abstinent, but did not think this was a problem because it was characteristically different to past, problematic times of drinking, then neither, CT or CCT codes may be appropriate.</p>	<p>For example, drinking when relaxed rather than feeling the need for drink because they are down is behaviour that may lead people to revise their goals and feel empowered by their ability to control their drinking in a social situation. In which case use AFN (ask, follow /neutral).</p>
<p>If R- and TS- are spoken together R- supersedes TS-</p>	<p>TS- is commonly spoken in general reports of recent drinking. Reason is an expression of meaning and potentially intention behind the behaviour and is arguably more meaningful. Also TS is likely to have already been mentioned already in the client's story.</p>
<p>A short statement regarding CT or CCT can be split into 2 utterances. E.g.</p> <p>"I can't help it, I really needed a drink" = A-, N-</p> <p>Although there is a CACTI code button for C+/- (ambivalent statements) statements are frequently split into two separate utterances, e.g.: "I want to stop drinking but I don't think I can" = D+, A-</p>	<p>Smaller statements capture more specific meanings and can still be grouped together before the analysis if necessary.</p>
<p>Statements regarding an absence of self-control or willpower are a reflection of self-efficacy and should be coded as Ability- (A-).</p> <p>e.g. "I go to the bar to ask for a 'cola' and when I ask for a drink it comes out as 'larger'!"</p>	<p>This is because self-efficacy or an ability to exercise self-control can exist with or without desire. The client has expressed an intention not to drink but has not explicitly stated that they don't want to or they will not, therefore it cannot be classified as D- or C-.</p>
<p>Ambiguous or conflicted statements on commitment in the same utterance = C+/-</p>	<p>Choosing CT or CCT depends on the context. If the client states that they tried not to drink and faced some ambivalence about</p>

	<p>it use CCT codes (D-, A-, R-, N-, TS-, C-) because their stated intention was not to drink.</p> <p>If they choose a goal (e.g. in session 1) that involves the least commitment to reduce their drinking, code as CT+/-</p>
<p>From hearing a few examples of unusual utterances it will be the case that more than one subcategory of CT or CCT is appropriate.</p> <p>“The drink slowly starts to take over the mind” = A-</p> <p>“It's like there is no dream or ambition”= C- or D-</p> <p>“It's like the bottle is talking to me saying, ‘go on have a drink you'll be alright’” = A- or R-</p>	<p>Since the reliability will be analysed according to three main categories (CT, CCT and neutral) the subcategory is not particularly important. What matters is that we are in agreement with these three.</p>
<p>Seeking Permission (PMS) and Complex Reflection (CR) both trump a question e.g. “um there are sort of worries and guilt and the feelings of deceit aren't there?”</p>	<p>The reflection or permission is the most influential meaning in this sentence. The question may even be rhetorical.</p>
<p>Relevant to parsing only</p> <p>How do I decide which utterance is the final utterance in the 3-part chain?</p>	<p>When 3 consecutive AFN utterances have been spoken by the client.</p>

Appendix E: Example showing the categorisation of behaviour codes into sequential chains

<344>

TSneg TSneg TSpos FN Rneg TSneg TSneg TSpos SRpos OQ0 Dneg AFN TSneg TSneg
 Dneg AFN SRpos Dpos . TSneg SRneg SRpos OQ0 CQ0 TSneg TSneg AFN SRpos CRpos
 CRpos CRposneg FN CR0 Rpos . Dneg Dpos SRpos CRpos Npos . Nneg Apos CRpos
 SRpos CR0 SRpos CR0 SRpos Rneg Rpos Rneg Rpos SRpos Rpos AFN /

Becomes:

CCT TOther AMBIV MICO CCT MICO CT . CCT MIIN CCT MICO CT . CCT MICO CT .
 CCT MICO AMBIV MICO CT /

The initial CCT is excluded because in all cases CCT was present and so that only transitions between the therapist and the client's response is analysed. The data then changes to:

TOther AMBIV . MICO CCT . MICO CT . MIIN CCT . MICO CT . MICO CT . MICO
 AMBIV . MICO CT /

Where a full stop (.) separates transitions within the recording and a / separates one recording from another.